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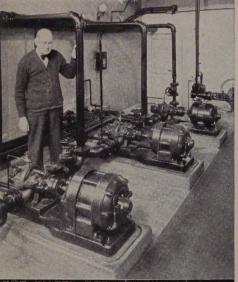
# uiding. TO FINE COLD DRAWN

Over the rough seas of adversity and across the calm waters of prosperity the Moltrup standard of quality has gleamed. constant and unwavering for nearly half a century ... With ever widening facilities, broader conceptions of service and a foundation of deep rooted experience. Moltrup is constantly more able to serve industry.

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# SAVE BUY THE ED THAT PAYS FOR

Read How City of Hastings, Michigan, Saved Over \$6300 a Year in Pumping Costs and Cut Water Rate 15%...by Replacing Old Pumps With Allis-Chalmers! Get the Whole Story on Allis-Chalmers Equipment...the Equipment that Pays for Itself!



THE WATER DEPARTMENT AT HAS-TINGS, MICH. City Engineer Bert Sparks inspects the pumps that have saved the City of Hastings as much as \$6372 in a single year!

• Water rate reduced 15%! Reserve fund of \$11,000 built up by a department that previously showed a deficit! \$38,000 saved in pumping costs!

That's what actually happened in the City of Hastings, Michigan, when City Engineer Bert Sparks replaced out-dated steam driven reciprocating pumps with up-to-the-minute Allis-Chalmers equipment!

It's not hard to understand why! Look at the record! The former fuel cost for steam-driven pumps was 6c per 1000 gallons pumped. But the cost for the Allis-Chalmers motor driven pumps is only 13/4c per 1000 gallons.

That means an act of \$6372 per year tings, in pumping c since the pumps we

# Allis-Chalmers Engir

No wonder that who was purchased in the City of Hastings space. For the engine ated Allis-Chalmers lower costs... actulars and cents! And that make Allis-Chalmers as executives in placountry have realize

Put Allis-Chalmer gineering experience Let an Allis-Chalme in the District Offic you the whole story your plant can get... ment that pays for i

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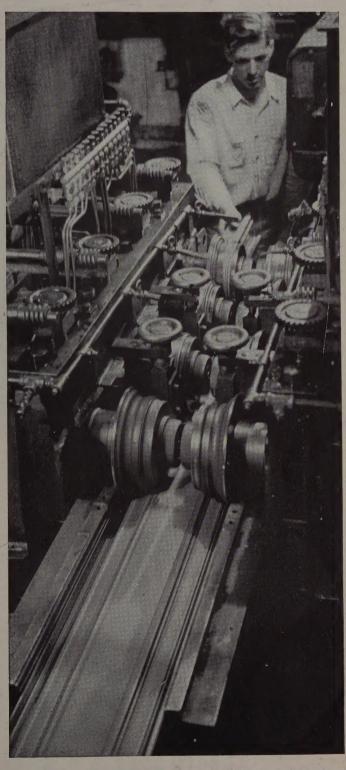


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THLEHEM STEEL COMPANY

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Seventy-foot candles on the working plane with the Type H MAZDA Mercury Lamps hung at a 14-ft.

# ... with TYPE H MAZDA MERCURY LAN

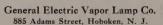
Better light for better sight and better, more uniform production with a minimum of fatigue. That is the modern picture of industrial trends. Men responsible for production are more and more concerned with the levels of illumination. They realize that lighting directly affects the efficiency of all men and machines. » » »

Jobs like the one shown are typical of what is being done. Bear in mind with Type H MAZDA Mercury Lamps you can provide higher light output for a given cost of energy. Enlist the cooperation of the General Electric Engineers. Have them assist you in providing light "engineered to fit the job."

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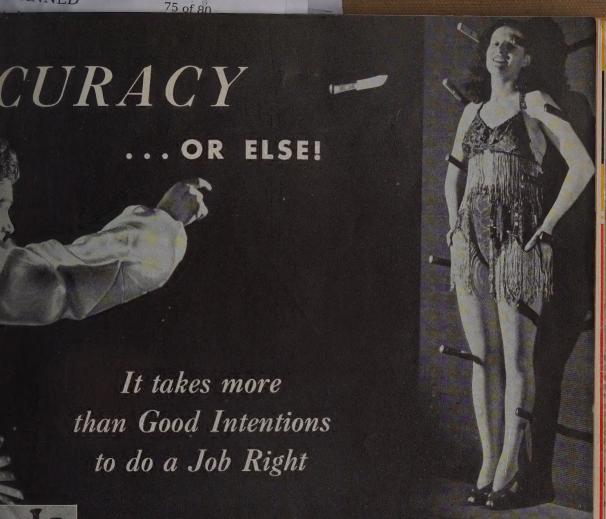
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# ELECTRIC

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ND it takes more than good intentions to put quality into wire. We have been making wire for over 100 years. In that time we have built up a background of experience which has been of great value to our customers. For in that time we have fully developed all of the requirements for putting high quality into wire. You can

count upon American Quality Wire to give the best results with the greatest economy.

American Quality Wire is carefully checked at every stage of its manufacture to assure that it is accurate in both metallurgical and physical properties. This product is produced in a complete range of sizes, grades, shapes and analyses. Our Sales Department and Engineering Staff will be glad to assist you in determining which wire will best serve your own particular requirements and our plants are strategically located so that deliveries can be made to meet your production schedule.

Serve your own particular requirements and our plants are strategically located so that deliveries can be made to meet your production schedule.

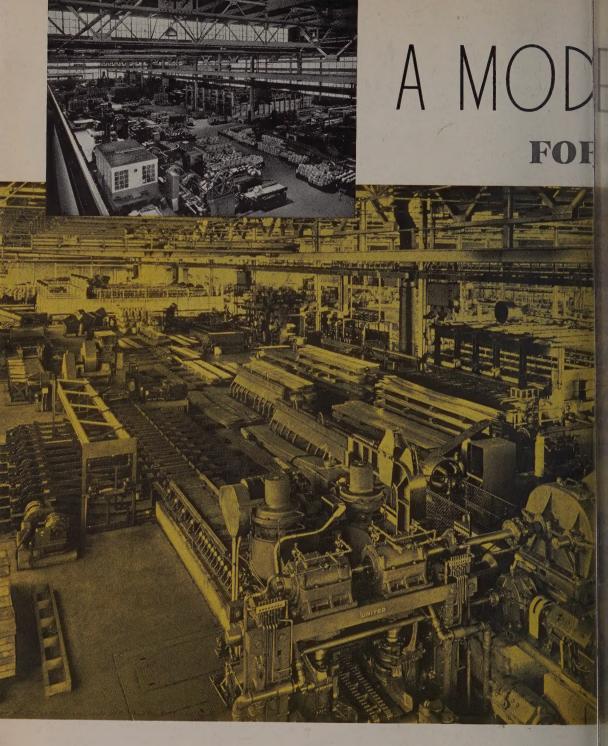
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TED STATES STEEL



A LONG stride toward the ideal of straight line production in the rolling of nonferrous metals has been achieved in the new plant of the Bridgeport Brass Company.

This project, with a monthly capacity of more than 6,000,000 pounds, is devoted exclusively to the production of brass, copper and copper-base alloys in sheets, coils and strips.

Two organizations were privileged to cooperate with the engineers of the Bridgeport Brass Company, who had developed the preliminary plans.

On Morgan Construction Company devolved the task of preparing a systematic production layout to insure continuous "straight-line" flow of material from cake to finished product, through hot and cold mills, annealing, pickling, and other processes essential to the correct working of nonferrous metals. This involved planning for maximum utility of all equipment, with locations,

capacities and transfer facilities carefully permit flexibility of production and low of

To Stone & Webster Engineering Co delegated the task of developing the placations for buildings for mill and laborate plete power and service facilities; the plans into a plant, efficient and modern in and with adequate provision for expansionation of all engineering and purchas supervision of construction, and the bud for the entire project.

The result—a new and far-reaching str ferrous metals industry. For Bridgeport, a that greatly increases the company's pr capacity.

For the nonferrous metals industry, a plete engineering and construction servisound experience and knowledge with vi

# LLING MILL PLANT

GEPORT BRASS COMPANY



l equipment.

NSTRUCTION COMPANY

CONSTRUCTION COMPANY, WORCESTER, MASS.





# SETTING NEW RECORDS

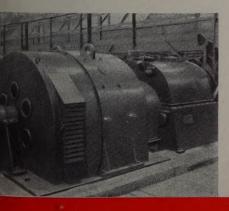
past year cold-strip mills equipped Electric have repeatedly broken all tin-plate production.

for example, rolled 840,000 pounds 29-inch tin plate in eight hours. Two ed mills have produced, respectively, 1766,000 pounds of tin plate in eight mages of these mills have likewise run in comparison with previous records.

he ways in which G-E equipment and elped in the achievement of such re-

akes possible unusual accuracy and the highest speeds. It keeps the percentpextremely low.

ol enables the operators to bring the threading, much faster than was ever nother reason why very nearly 100 per



Above: This five-stand tandem cold-strip mill located in the Pitts-burgh area, set a record for tin-plate production within the past year. It is G-E equipped throughout

Below are shown the G-E motors that drive the main rolls of a cold-strip mill, located in the South, which has also achieved record breaking performance. It is G-E equipped throughout

FOR
TIN-PLATE
PRODUCTION

cent of the strip rolled measures to gage—and this at speeds as high as 1800 feet per minute!

**3**—Tensiometers between stands enable the operators to keep the strip at constant tension at all times and so eliminate the principal cause of strip breakage and damage to the rolls.

**4**—A new type of tension control on the winding reels keeps the coils uniformly tight—even the turns next to the drum.

These examples of improved electrical application indicate how G-E engineering aids the steel industry in obtaining increased production of high-quality steel. They show the results of unceasing co-operative effort in turning the ideas and suggestions of steel-mill engineers and operators into actual achievement. They are evidence of the ability of G-E engineers to handle successfully the electrical requirements of *your* plant. Our nearest representative will be glad to discuss them with you. General Electric, Schenectady, N. Y.



# Hz shows steel user. Gollo in parts processin

• Gold in parts processing? Certainly, there's gold to be found—more than you might imagine—right in your fabricating equipment, furnaces, carburizing boxes and quenching tanks. It's gold in the form of reduced costs, fewer rejections, faster production, improved quality and increased profits. All you need do is find it.

That's where the Union Drawn Field Metallurgist comes into the picture. It's his job to help you find the gold—just as he has helped count-

less other manufacturers of steel parts

He's an expert steel metallurgist—als tical man with broad experience. He has an intimate knowledge of steels and to cacies. He knows just what is neede to provide the results you desire. He acquainted with the changes in hardness, ductility and strength that result for ations in temperature, in duration of in quenching media.

He will enter your plant as a prospecting hidden gold. He will work with your studying your needs, the steels you a and your manufacturing practice. For cooperative effort may come a change analysis, fabrication methods or heat processes—or even a slight change design that will cut your costs or production efficiency.

Welcome him when he visits your planthe comes with but one purpose in mind you find gold in parts processing. He's work with you, your metallurgists an eers—at any time. Union Drawn Steel of Republic Steel Corporation, Massillo

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# YOU HELPED BUILD THIS GREAT NEW WELDER!

200-AMPERE SERVICE (Square Frame)

# Designed as You Want It

You, who use welding as an everyday tool, are responsible for this new development. You asked for a welder with fine arc qualities, for a unit that saves space, handles easier—costs less to operate and less to own. Here it is! Built with an intimate knowledge of your requirements—the greatest welding improvement in ten years.

Small, More Compact, Easier to Use

Imagine a 200-ampere service that takes up less than  $3^{1}/_{2}$  square feet of floor space! It's as modern as television—as compact as your new radio. It fits on a shelf or under a bench. You can place it closer to the job with shorter cable lengths to reduce power loss and cable investments. And with removable louvers to and side plates it of the power loss and cable investments. ers, top and side plates, it's far more accessible for inspection and maintenance.

# One Control Gives You Any Desired Arc Length

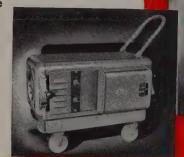
With a single adjustment, it gives you the arc potency to suit any welding job from 40 to 225 amperes. You can't mis-synchronize open circuit and arc voltage as is the case with two or more current regulating devices. This unit generates true welding energy without the need for such corrective devices as reactors, resistors, separate exciters, rheostats, or external stabilizers. P&H-Hansen's patented features save you time and money in faster, easier welding.

# Now, Your Welding Dollar Buys More

It is simpler in design. Only two major parts, frame and rotating mem-It is precision-built, on a production line. Its manufacturing costs are lower. Our economies are passed on to you in the form of lower purchase price—to give you more than your money ever bought before in a high quality welding service. Full details are yours for the asking. Harnischfeger Corporation, 4411 W. National Ave., Milwaukee, Wis.

# For Single and Multiple Installation

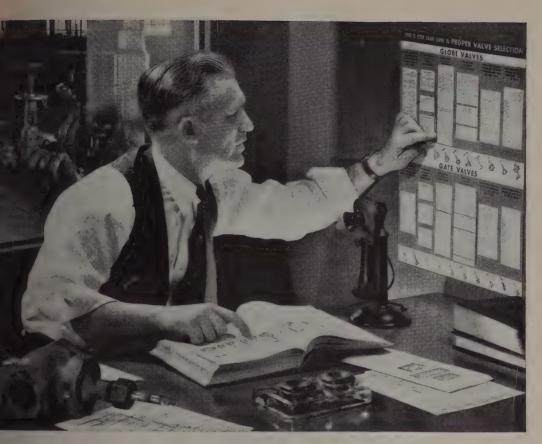
Built for vertical stacking and parallel hook-up, two of these units give you two welding services of 200-amperes each or one 400-ampere service. A single "multiple shifter" provides accurate current settings on two or more machines simultaneously.



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valves and requirevoided. Let Crane's e Characteristics of d Gate Valves," with on Guide, help you azard in your plant. This guide tells you how well each of the basic valve designs, globe and gate, and their many combinations of disc, bonnet, and stem types, are fitted to service conditions. Such information combined with your knowledge of your requirements, leads you to the ideal valve for each installation.

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The Industrial Brownhoist floating crane shelow has a capacity of 35 tons at a rad shelow has a capacity of 35 tons at a rad shelow has a capacity of 35 tons at a rad shelow has a capacity of 35 tons at a rad shelow has a lock gates on the Ohio River. It is one of an types and sizes built by Industrial Brown over a period of years for use on steel pontos ocean going steamers, salvage barges, compontoons and lake freighters.

Our extensive experience, together with large engineering department, are available to help you solve your own crane probable.

LOCOMOTIVE CRANES, 10 TO 200 TONS CAPACITY
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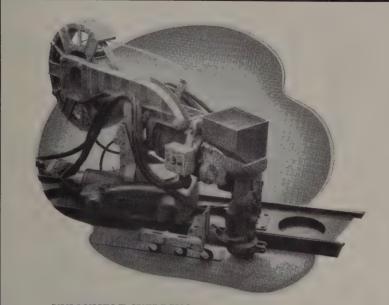
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# Right Process for the Job at Hand

ty to help its custoy the right process nd—and apply it the y—frequently counts aking profits for the loes the price of the

any Linde products o speed up producresults, and lower more important, is e knowledge of how them to industry's

or certain that your realizing full benefit ce, we suggest you had Linde man. Any can tell you how the ation is geared to plant the engineer that means control cient application of s. The Linde Air rany, Unit of Union arbon Corporation, ipal cities.



UNIONMELT WELDING is a revolutionary electric process that is fully automatic. With it, high-quality welds can be made in one pass at amazing speeds. It is being used successfully in many different industries to make better products in less time and at lower cost. The illustration shows a Unionmelt welding head speeding the fabrication of a barge. Linde research developed this process—and Linde engineers can help you use it.

# ORE TO CONTROL THAN "EVERYTHING FOR WELDING AND CUTTING"



AME-CUTTING—One sesful methods of shaphas the machines, the counts more—the orhe knowledge to help rocess profitably.



FLAME-HARDENING — A means of imparting a hard surface "case" to make metal parts subject to wear last longer. Linde engineering facilities and process data can help you utilize this process to best advantage at lowest costs.

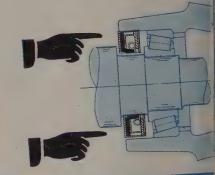


LINDEWELD MULTI-FLAME — Still another Linde process providing a fast, money-saving means of joining pipe with strong, ductile welds. Behind your operators, Linde Service and research stand, ready to help when needed.

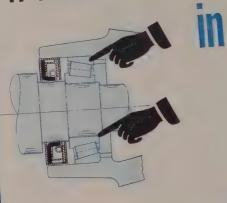
EN . NITROGEN . HYDROGEN . RARE GASES AND MIXTURES . UNION CARBIDE . ACETYLENE . OXWELD APPARATUS AND SUPPLIES . UNIONMELT WELDING



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leaders are invited to comment upon articles, editorials, reports, prices or other editorial naterial appearing in STEEL. The editors cannot publish unsigned communications, but t their discretion may permit a writer to use a pseudonym when a bona fide reason exists or withholding his identity. Letters should be brief—preferably not exceeding 250 words.

# tard Progress"

think of any plan ablic the facts as to machinery on emmore I am inclined it is all a waste of s nothing new about excepting possibly the have now passed the nere is no longer the in of providing the life.

g machinery in one of first came into use one Age, and this pe-exactly with the bemarked improvement of living. It is ridione to think that the nd use of power-opnery can ever been retarded. Before done human beings give up their desires better things, and well as I do that lible.

the unemployment the same ones who been trying to circumimmutable laws of sing man-made laws, id that even the gods against stupidity?

JEROME R. GEORGE

d Engineering Co.,

n News

ne your new aviation

department is being well handled. . . The items included have been intelligently selected and edited and should be of interest to readers of STEEL, as well as valuable in indicating markets.

HOMER H. SHANNON

Lockheed Aircraft Corp. Burbank, Calif.

### Old Steel Still Good

To the Editor:

Wrecking of the Capitol building in Chicago as reported in Steel (May 8, p. 27), brings up many memories to the old Chicagoan. That half the steel and iron from its demolition is in fit shape for resale is not a surprise after the condition in which structural steel from other Chicago skyscrapers has been found.

An interesting fact in relation to this building is that from a few months after its erection one corner was supported on jacks which were turned frequently to correct subsidence of the foundation at that point. The underlying soil was a swamp and the structure, 22 stories, was built on rafts floated on the top of the clay and water. On one corner the raft was driven steadily downward by the building's weight and this was corrected at intervals.

I do not know if the raft ever reached hard pan and stopped but as the building, then known as Masonic Temple, was overshadowed by taller structures it became an old story and less attention was paid to it.

This was not the first steel building in Chicago but it was the tallest up to the time of its erection and the observation platform on its roof rivaled in its day the present Empire State tower in New York.

CONTRACTOR

Chicago

## Is This Promised Land?

To the Editor:

If this is not the promised land for men who work for hourly wages, then no such place exists on the face of the earth. The comparison of wages in this country and other industrial nations, made by the American Iron and Steel institute, (Steel, May 8, p. 21) reveals the spread between American wages and those in foreign countries.

Steelworkers here more than double the best wage in any other country and the rate is in even higher ratio with others. Many other advantages also exist in employment here in comparison with Europe and the Orient. Nowhere else do hourly wage workers ride in their own automobiles or enjoy the household conveniences common in homes of the American workman.

Another item in the same issue, page 30, shows that in the past 25 years the factory wage dollar has increased purchasing power practically three times.

Probably one effect of the better living conditions thus brought about has been greater efficiency, which in its turn has tended to hasten lowering of production cost. However, the general effect has been to place workers in the United States in an enviable position, compared with their fellows in other parts of the world.

GEORGE THOMAS

Detroit

# Meet MIKE the watchman

Right now, in many of the world's greatest steel plants, this micrometer adjusting wheel controlling the valve-action of the Kemp Industrial Carburetor, is on watch . . . safe-guarding the highest standards known in annealing, protective atmospheres, and tin plate manufacture... and watching the gas bills too!

Experience in these plants that Kemp 100 percent premof gas and air cuts fuel contion by an appreciable pethat accurate control of flame acteristics and flame pressurmit new standards of quality uniformity. Tell you more? Gl Address The C. M. Kemp!

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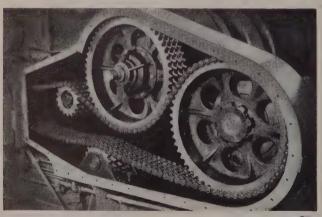
# In 1896... bicycle chains In 1939... feathering prope

# Nickel made both run longer

STYLES in steels change, too. Yet among the first commercial users of alloy steels, the Whitney Chain & Mfg. Co., Hartford, still depends upon Nickel alloy steel. In 1896, Whitney built bicycle sprocket chains from 5% Nickel steel. Today's Whitney roller chain industrial drives still include 5% Nickel to assure toughness and wear resistance.

1939 airliners can "shift gears" in mid-air. For this, thank Hamilton Standard engineering which produced Hydromatic feathering hubs, and modern metallurgy which provides heat treated 5% Nickel steels that withstand the stress, shock and crushing loads imposed.

For information about money-saving applications of Nickel in your industry, please write to the address below.



No drag or damage from a dead engine on a modern plane equipped with Hamilton Standard Hydromatic self-feathering propellers. Vital parts in hub mechanism are forged from SAE 2515 5% Nickel steel and SAE 4340 Nickel-chroniummolybdenum steel.

43 years of Nickel alloy steel experience is back of this Whitney roller chain. Whitney engineers use a special 5% Nickel alloy steel similar to SAE 2515 or 2520 for wear-resisting pins. Strong, shock-resisting side links are Nickel-chromium steel, SAE 3140. Rollers are SAE 3130, bushings SAE 3115 Nickel-chromium steels.

Can your trucks haul 18 tons uphill over rough ground? Euclid Trac-Truks do move such payloads at low cost because vital parts, from engine to trailer axle, are made lighter yet stronger by using Nickel alloyed materials. These uniformly tough ductile steels are heat treated to develop the most useful combination of mechanical properties for this service.



THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL ST., NEW YOL

# STEEL

PRODUCTION · PROCESSING · DISTRIBUTION · USE

# le Editor s the News

iownward trend in steel demand is less it week's drop of 2 points in the steel ate to 47 per cent of ingot capacity was 4.93) to the coal situation. With at least aption of mining now in prospect, a modement in steel volume is expected. It easingly evident (p. 43) that the recent is been overdone. . . One of last week's lopments was price cutting of a more acter on sheets and strip, with offerings 4 or more per ton under the previously s. . . . Most sharply expanding industry today appears to be aviation; airtion facilities, under the impetus of miliments, continue (p. 35) to absorb much

manufacturers (p. 41) have adopted a tecting themselves against abuse of their users; they hereafter will make replacements only at the factory. This action was caused by the fact that replacements have reached nent an intolerable percentage of gross sales. . . . Weirton Steel Co. (p. rtaking a program that will triple its caproducing structural shapes; nine entireucts will be made. . . . One of the large builders earned a total net profit in the of this year (p. 37) which comes to 6 each car sold to dealers. . . . The phosof treatment on engine parts, aimed at of scuffing during the initial wearing-in 8), continues to find wider acceptance.

ngton there is evidence that the adminisosing patience over the attitude of busith regard to government policies and their

braking effects on business (p. 32); there has been a reversal from the policy of "appeasement", a term, incidentally, the administration does not like. Federal ission (p. 34) is investigating resale price ander state fair trade laws. . . United

States Steel Corp.'s building at the New York World's fair (p. 28) is built "inside out", with supporting steel on the outside... Europe (p. 112) is buying 400,000 tons of scrap here... Iron powder metallurgy (p. 38) continues to make progress... States and cities increasingly are curbing (p. 23) undesirable practices of organized labor.

A wisely conceived program of tooling would enable industry not only to provide more employment, but to help itself, for the need for such a program

Need for Retooling

is great. This is the opinion of this week's contributor to STEEL'S Forum on Re-employment (p. 46), Frederick S. Blackall, president and treasurer, Taft-Pierce

Mfg. Co., Woonsocket, R. I., and president, Special Tool, Die and Machine Shop institute. . . . A "hot" lightning generator is being used in experiments to improve electric power apparatus. . . The copper and brass industry is expected to spend \$150,000,000 on new plants and equipment over the next five years (p. 48) as part of a program aimed at continuously bettering service to consumers. . . . Tin is toughened (p. 78) by adding tellurium.

Combined riveting and welding technique is utilized by one company (p. 52) in building steel pleasure boats... Inexpensive limestone has been found

Reducing Vibration effective in neutralizing pickle liquor when properly handled, and is to be used (p. 54) in a commercial installation soon to go into operation. . . . Narrow gage rail-

road, with battery-operated locomotives, is the basic handling system (p. 60) at a 90-acre plant devoted to production of rolled nickel and nickel alloy products. . . . Interesting features are incorporated (p. 66) in two new malleablizing furnaces with 36 hours' time cycle. Quieter machinery is obtained through a system which balances all types of rotating parts, thus (p. 72) reducing vibration and noise. . . . Much new equipment (p. 80) is available for more efficient production.

EC Krentzberg

# You can't tell the cost of steel un

... after a reasonable quantity of steel sheets have been put through forming and finishing operations ... after all time losses and rejects are accounted for ... then, and then only, can you tell how much your steel is costing you.

Can this cost be reduced? You may think no saving can be made. But why not make sure? Put this question to an Inland metallurgist, for it is his business to know the answer or find it for you quickly. In a surprising number of cases Inland Men are able to find new economies or ways to improve the result.

You will like the friendly way in which your nearest Inland Office will co-operate whether you need steel or information about it.

# INLAND STEEL C

38 South Dearborn Street, CHICAGO . District Offices: DETROIT . KANSAS CITY . MILWAUKEE . ST. 10115

# States, Cities Adopting Elense | Leasures Against Radical Labor Elements

impatience with domidestructive tactics of organizations is finding a state and local legisand ordinances to limit strict strike action, and activities, are receiving measure of support. actments are conspicu-

endulum of public oping an anti-union swing ognized by labor leaders ovember's election. But of several new stateme beyond their expecta-

widespread, these revs indicate a trend in factors are significant: drastic restraints have d by those states noted liberal treatment of

rs have played an imin initiating and supunion laws;

tions have resulted not mate" union activities rs and working condirom abuses of power by rs.

17 bills to curb labor re introduced in state this year. Five already have been passed by both houses of such legislatures.

In contrast, a large number of bills favorable to labor unions introduced in state legislatures met little success. In 35 state legislatures, 42 bills contemplating state labor relations boards—mainly of the type known as "little Wagner acts"—and 33 anti-injunction bills were introduced.

Of all these, to date only one—an anti-injunction measure in New Mexico—has been enacted.

### Reject Pro-Union Bills

Mass introduction of pro-union bills, strikingly similar and often patterned after national legislation, discloses the hand of national labor organizations.

Their rejection by the state legislatures is interpreted as a reaction against the waste and strife caused by labor disputes in past four years, and indicates a significant shift in public opinion.

Most important anti-union laws have been enacted in the Middle and Far West. Of these, Oregon, long known as a liberal state in which labor unions were welcomed and encouraged, has passed the most drastic legislation.

Aroused by four years of strikes,

closed factories and silent sawmills, racketeering, and battles between opposing union factions, Oregon voters last November initiated and adopted a measure that restricts many activities of organized labor.

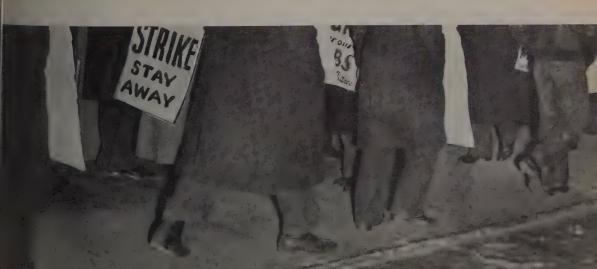
The bill outlaws any labor dispute not between an employer and a majority of his employes. It forbids jurisdictional wrangles between competitive unions. It limits legal labor disputes to issues directly concerned with wages, hours and working conditions, and makes a strike for union recognition automatically illegal.

Sympathy strikes and secondary boycotts are forbidden, and all picketing not squarely connected with the restricted sort of labor dispute now permitted is barred.

It makes illegal attempts to prevent a man from working for an employer who wants to hire him. It forbids labor unions from interfering with manufacturing, harvesting or commerce.

Unions are prohibited from collecting funds for other than "legitimate requirements," and any union member may demand at any time a complete accounting and record of union property. Courts are to enforce the act by injunction.

The Oregon anti-injunction act and



all other legislation in conflict were repealed.

Needless to say, the act aroused both fear and ire in labor leaders. In addition to being drastic, it was a direct mandate of the people, not action by representatives upon whom the labor unions' wrath could be inflicted. Both major unions are seeking its invalidation through the courts.

California and Washington initiated similar measures, but both were voted down on the grounds they were too severe. Washington's bill, however, lost by only a 9 per cent margin.

Los Angeles two months earlier had initiated and enacted in a city ordinance restrictions on picketing and strike action, coercion and intimidation.

Rural counties and small cities are following Los Angeles' example and several already have approved union regulations.

Perhaps most influential proponents of the anti-union measures on the Pacific coast were farmers' associations, organized to combat labor unions after farm crops had rotted in the fields because harvest hands were on strike or because transportation facilities were tied up.

Wisconsin in recent weeks has passed two bills curbing unions. First it repealed part of the state's anti-injunction law and imposed restrictions on picketing. This act defines a labor dispute as "any controversy between an employer and a majority of his employes in a collective bargaining unit concerning the right or process or details of collective bargaining, or the designation of representatives."

### Restrict Union Practices

It decrees it unlawful for anyone to picket or induce others to picket an establishment, employes, supply or delivery vehicles or customers, or interfere with the business, or interfere with any person desiring to transact business, when no labor dispute exists.

The second Wisconsin act repeals the state's "little Wagner act" and substitutes a measure which prohibits employes as well as employers from enumerated unfair labor practices.

Called the "employment peace act," it gives employers the right to petition for determination of employe representatives and contains other provisions of the "equalizing" type. These declare the following acts of employes to be unfair labor practices: Mass picketing, picketing or boycotting an employer unless a strike has been called by a majority of the employes involved, conducting secondary boycotts, taking unauthorized possession of an em-

ployer's property, violating a collective bargaining agreement, intimidating or coercing other employes

Sympathetic strikes "in support of those in similar occupations working for other employers in the same craft" are permitted, however.

Closed shop contracts are permissible only when at least 75 per cent of the employes involved have voted in favor of such contracts in a referendum conducted by the state labor board. The board is required to terminate a closed shop contract if it finds the union which is a party thereto has unreasonably refused to accept as a member any employe within the unit covered by the agreement.

Employers are not permitted to check off union fees unless they have been authorized to do so by the employes individually and in writing.

### Labor Battled Legislation

Both acts were fought vigorously by labor organizations, declaring the "labor movement in Wisconsin would be set back at least 50 years."

Minnesota also wrote severe restrictions on unions into the statute books. Rural legislators were determined to put sharp teeth into the law, while Governor Stassen exerted a powerful influence for moderation. The result is an act which Minnesota lawmakers termed a "two-sided Wagner act," and which they believe may well become a model for other states.

It provides for a labor conciliator whose function is to mediate disputes and promote use of voluntary arbitration. Conciliation provisions were copied after Swedish practice.

The law defines unfair labor practices of employers and unions. Those affecting employers are similar to those contained in the national labor relations act, with power to organize for collective bargaining added.

Those affecting unions forbid coercion, sitdowns, strikes called without ten days' notice, all interference with transportation, use of public roads or ingress or egress at any place of employment, picketing by non-employes unless a majority of the pickets are employes of the struck places, use of more than one picket at a single entrance of a place where no strike is in progress.

Calling of strikes or lockouts in violation of existing contracts and discrimination by an employer in favor of any one union, except in closed shops, also are unfair labor practices.

All unfair practices, on both sides, are punishable as misdemeanors.

Provisions of the state's anti-injunction act relating to labor disputes are lifted where unlawful practices occur.

Oklahoma passed a law prohibit-

ing sitdowns within of sabotage.

Both houses of the ture voted to outlaw cept by employes who tinuously employed to the strike and prity of employes had voted for changes in or conditions of employer. This bill, killed by procket upts

killed by pocket veto. Flint, Mich., scene most bitter phases of mobile strikes, passonance to protect far from molestation, insthe plant. Action was council while 500 ur the legislative chambe demonstrating their of

Michigan elected the nor Fitzgerald on peace program which effective state labor repenalties for sitdowns to be filed with the bidays allowed for meding limited to employ this program was slown fitzgerald's death

Restrictive bills are nine other states.

### WOULD EXEMPT UN FROM ANTITRUST L

CIO's John L. Lew began a campaign to sment to the Sherman for the protection of This is being done, because of the court Philadelphia which assage verdict of some \$70 a hosiery union.

A special CIO commination appointed, Lewis stabilize a nation-wide profile threat to all labor organized threat to all labor organized to petition congress to the stated in such clear, unmistakable terms that can understand that act can never again by trade unions," said Mr.

# Irvin, Block Nam Honorary Vice Pa

M. A. Irvin, former man, United States Steel York, and L. E. Block Inland Steel Co., Chicag elected honorary vice American Iron and Ste Their resignations as the institute were also J. L. Perry, president Illinois Steel Corp., and son Jr., vice chairman have been elected to the board of directors.

# lution Figures Emphasize

# ing Importance of Warehouses

SES are becoming inportant as steel outesed by STEEL's annual of finished steel disly 8, p. 15), they acnore tonnage in 1938 important consumer

in years of high and on, they have consista greater proportion inished steel produced the years preceding harcords are available.

distributed to waretear constituted a recph of the total—17.13 -presenting a sharp 1.28 per cent in 1937. Seentage previously resion. Their gross ton-9 was 3,202,619 out of 1.2,957 tons of finished 1.2,957 tons of finished 1.2,695,349. Thus, while 1.6,695,349. Thus, while 1.5 finished steel distribution from 1937 to 1938 was 42.8 per cent, the decrease in warehouse tonnage was only 26.2 per cent.

Last year was the first that warehouse tonnage exceeded that taken by the automotive industry. This industry, according to STEEL's compilation, dropped to second place with 16.88 per cent, while building ranked third with 14.77 per cent. Building's marked improvement in rank, as explained, was partially due to the fact some tonnage formerly allocated to railroads and highways was included in the 1938 building classification.

Adopting Steel's compilations for 1938 and prior years, Walter S. Doxsey, executive secretary, American Steel Warehouse Association Inc., has grouped the warehouse figures as shown in the accompanying tables, to indicate their relative importance. Analyzing them for the association he states:

"The increase in the percentage of the total production of finished steel which reached consumers through distributors in 1938 follows precedent since in the years of curtailed production, when large tonnage orders for motor vehicles, buildings, subways, etc., are absent from the market, the warehouses have always shared a relatively larger proportion of total steel produced.

"In 1938 sales of galvanized sheets, wire products, and concrete reinforcing bars through steel distributors were an important factor in the relatively high percentage with which the secondary outlets were credited. Tonnages of these products handled by warehouses declined but little from the preceding year.

"Sharp declines, however, were experienced in warehouse sales of standard commodities such as plates, structurals, hot-rolled bars, and sheets other than galvanized, the declines from 1937 being 50.4, 40.2, 55.2, and 44.4 per cent respectively."

# Decline in Birth Rate "Affecting Industry"

■ Federal government policies in enacting legislation which tends to restrict production, discourage enterprise and dissipate capital is to a considerable degree responsible for the decrease in the national birth rate from 1933 to 1937. This is the conclusion reached by A. W. Rucker and N. W. Pickering, business economists, in a study issued by Farrel-Birmingham Co. Inc., Ansonia, Conn.

"The increase in population in the ten years ending in 1940 will be the lowest since the decade of 1850-60; instead of an additional 13 million population predicted, it is estimated the increase will not be greater than 8½ million over the population of 1930.

"This disturbing drop in the rate of population growth will, unless reversed, bring the national population peak nearer by 20 to 25 years than has heretofore been anticipated. Such an outlook carries with it grave consequences to a substantial part of American industry. Already the effect on certain industries is visible."

Most important factor in population growth is economic, the study finds.

Suggested methods to encourage a higher birth rate: Removal of excessive regulation and taxation; resistance to further dissipation of national and corporate capital, and encouragement to its accumulation; cessation of interference in price relationships which restrict exchange of goods and services and thus limit production and consumption.

# eehouses' Percentages of Finished Steel

(Gross Tons)

													Total					
													Distributed	I	Distrib	outed	to	Per Cent
													by Mills		Ware	house	S	of Total
			·					,					18,692,957		3,20	2,619		17.13
					٠	Į				ı,	×		32,695,349		4,34	1,906		13.28
			٠				٠	٠		٠	٠		29,072,596		4,10	8,497		14.13
									۰	۰	٠.	۰	20,819,710		3,00	5,129		14.43
										۰	٠		15,870,696		2,22	5,753		14.02
													13,743,121		2,04	9,403		14.91
			٠	٠							۰		9,317,974		1,50	1,736		16.12
													17,396,997		2,20	5,570		12.68
													25,769,914		3,14	7,249		12.21
													36,157,095		3,99	0,122		11.05
													28,537,621		3,09	1,715		10.83
													28,182,187		3,61	3,225		12.82
													29,656,836		3,12	1,960		10.52
													,					

# ts Distributed and Warehouses' Proportion

Tons)		
Total		
Distributed	Distributed to	Per Cent
by Mills	Warehouses	of Total
630,445	6,729	1.06
251,449	17,447	7.24
1.515.611	107,709	7.11
1,4 (0,38 (	152,119	10.30
2,115,500	242,594	11.48
747.998	194,696	26.10
. 1.689.577	28,741	1.70
1.043.018	569,087	54.50
3.534.370	389,290	11.00
1,393,426	49,925	3.58
2.035.288	705,283	34.65
1.670.544	678,949	40.06
590,344	60,050	10.18
18.692.957	3.202.619	17.13
	Total Distributed by Mills 630,445 251,449 1,515,611 1,475,387 2,115,500 747,998 1,689,577 1,043,018 3,534,370 1,393,426 2,035,288 1,670,544	Total Distributed by Mills 630,445 6,729 251,449 17,447 1,515,611 107,709 1,475,387 152,119 2,115,500 242,594 747,998 194,696 1,689,577 2,741 1,043,018 569,087 3,534,370 389,290 1,393,426 49,925 2,035,288 1,670,544 678,949 590,344  Distributed to Warehouses

# Coal Tension at Furnaces Eased

■ SOFT coal mining is being resumed in a number of districts this week. Break in the six-week deadlock between operators and unions apparently removes possibility of further retrenchment in activity of iron and steel plants because of declining supplies of coal and coke.

Additional curtailment of blast and open-hearth furnace operations occurred last week before a way out of the tieup was devised. While a large share of the decline since April 1 in iron and steel production has resulted directly from slower demand, the coal mining suspension has been a moderate retarding factor in both orders and operations. Some compensation now may be expected, although no sharp increase in steelmaking is in prospect.

How many mines will resume work early this week is problematical. Operators have been given the opportunity to deal individually with the United Mine Workers union, and some of them signed contracts and reopened their mines before the close of last week. Certain railroads will be the chief beneficiaries of the renewed flow of coal, with both heavier carloadings and the reopening of some shops looked for soon. This latter circumstance will have a beneficial effect on steel consumption.

Among the first regions to sign new contracts covering a "union" shop were western Kentucky, Illinois and Kansas-Missouri district. Under terms of the agreement which formed the basis for the break in the dispute, the closed shop requested by the CIO union will be supplanted by what is known as a "union" shop. This requires that men hired by the employer must join the union, usually after a specified length of employment.

# Dust Control Equipment Group Expands Service

■ In line with a policy adopted some months ago, Dust Control Equipment association has arranged for an interchange of ideas between its members and American Foundrymen's association's industrial hygiene codes committee. At a recent association meeting in Cleveland, James R. Allan, chairman of the A.F.A. committee, described progress made by his group with certain industrial codes, and outlined future activities.

Co-operation of the dust control equipment manufacturers with other technical societies and state labor departments was reviewed.

Recently the association decided that performance of equipment could be improved by making available to manufacturers of equipment the assistance of the association's engineering committee.

Results of co-operation have been so productive, according to the association's executive secretary, Arthur J. Tuscany, Penton building, Cleveland, that the organization has decided to contact grinder manufacturers and woodworking machinery manufacturers with reference to problems in their fields.

# FINANCIAL

### DIVIDENDS DECLARED

■ M. A. HANNA CO., Cleveland, 25 cents on common, payable June 1 to record May 20. Previous dividend was 12½ cents paid March 31 last year.

Continental Can Co. Inc., New York, quarterly of \$1.12½ on the \$4.50 cumulative preferred, payable July 1 to record June 10.

Pittsburgh Coke & Iron Co., Pittsburgh, \$1.25 on \$5 preferred stock, payable June 1 to record May 20.

Continental Steel Corp., Kokomo, Ind., 25 cents on common, payable July 1 to record June 15. Like amount paid in April.

Hobart Mfg. Co., Troy, O., regular quarterly, 37½ cents on class A common stock, payable June 1 to record May 19.

Brown Fence & Wire Co., Cleveland, 10 cents on common, payable May 31 to record May 15. Same amount was paid Feb. 28.

American Fork & Hoe Co., Cleve-

land, 15 cents on cordinate June 15 to record amount was paid Mar

# 2500 Study Safe Problems at Ch

Accident prevent marily management, dents are operating e too frequently the obedience to well reand practices, C. M president in charge Republic Steel Corp., industrial leaders at perts at the sevent Midwest Safety confe-May 11, Chicago.

"We do not tolerate ence of operating instresult in waste and in why should we toler obey or to enforce structions for safety' said.

"Safety," he added, ing problem and canno or set apart from a production."

The conference he at Sherman hotel, wa more than 2500. In hall were displays by turers.

Three panel discusdustrial safety includents, maintaining intering. Leaders were Framan, Republic Steel Conger Hodge, Intervester Co., and F. M. Pobell Telephone Co.

# 150-Foot Arm Puts Bridge Steel in Place

Erecting steelwork for Cleveland's \$7,000,000 Main street bridge with two Link-Belt crawler cranes. These machines, operating from/ the ground, are each equipped with a 130-foot boom, having a 20-foot jib extension. Loads as heavy as 25 tons have been handled on the 130-foot boom at 32-foot radius. Ten-ton loads are regularly being lifted on the jib boom. Fifteen thousand tons of steel is being used in the bridge



# **Dutput Off** April

ON of steel ingots in 85 gross tons, repre-per cent decline from in March, but an iner cent over 1,919,042 last year

averaged 50.99 per cent owest since last Sep-March the rate was it and in April, 1938, Average weekly as 696,267 tons, com-66,596 tons in March, ons in April, last year. in the table below revised and adjustrevised American Iron and e to conform to yearf production by mem-

# p. Shipments ghtly in April

ites Steel Corp.'s shipnished steel in April 9 tons, compared with in March and 501,972 , 1938. April decrease, s accounted for mainly orking days as against Daily average rate ly 383 tons, 0.7 per cent,

Four months' shipear aggregate 2,936,668 ed with 2,067,216 tons i last year.

her favorable showing ue in part to increased

# **District Steel Rates**

Percentage of Ingot Capacity Engaged In Leading Districts

, V	/eek		Sa	me
ei	nded		we	ek
M	ay 13	Change	1938	1937
Pittsburgh	36	— 8	25	83
Chicago	46.5	- 0.5	31.5	84
Eastern Pa	37	+ 1	29.5	73.5
Youngstown	42	1	27	83
Wheeling	64	None	38	94
Cleveland	45.5	+ 1	23	79.5
Buffalo	35	None	28	90
Birmingham .	55	None	66	83
New England.	45	None	30	87
Cincinnati	52	None	25	94
St. Louis	51	None	33.3	94
Detroit	59	None	18	100
	_			
Average	47	2	30	89

specifications for tin plate and rail shipments against backlogs. Structural shape deliveries also were large. In lighter lines demand has been for current needs only and to replenish stocks. Many consumers usually carrying large stocks have limited buying to bare necessities.

### U. S. STEEL CORP. SHIPMENTS (Inter-company shipments not included)

		(Tons)	)	
	1939	1938	1937	1936
Jan.	789,305	518,322	1,149,918	721,414
Feb.	677,994	474,723	1,133,724	676,315
March	767,910	572,199	1,414,399	783,552
April	701,459	501,972	1,343,644	979,907
May		465,081	1,304,039	984,097
June		478,057	1,268,550	886,065
July		441,570	1,186,752	950,851
Aug.		558,634	1,107,858	923,703
Sept.		577,666	1,047,962	961,803
Oct.		663,287	792,310	1,007,417
Nov.		679,653	587,241	882,643
Dec.		694,204	489,070	1,067,365
Adj.*		\$30,381	†77,113	†40,859
Total		6,655,749	12,748,354	10,784,273

\*Yearly adjustment. †Deduction. ‡Increase.

# Steel Ingot Statistics

		onthly Pr	oauction-	-All Com	pames	Weekiy	3.7 In
-Open	Hearth-	Bes	semer		ital ——		Number
1	Per cent		Per cent		Per cent		of weeks
Gross	of	Gross	of	Gross	of	companies,	
tons	capacity	tons	capacity	tons	capacity	gross tons	month
by Com	panies whi	ch in 1938	made 97.31	% of Open-	-Hearth an	d 99.90% of	${\bf Bessemer.}$
,069,011	55.73	147,642	27,26	3,216,653	53.18	726,107	
785,629		196,382	40.16	2,982,011		745,503	
201,132		194,889	35.99	3,396,021	56.14	766,596	
781,008	52,15	205,977	39.28	2,986,985	50.99	696,267	4.29
.836,780		744,890		12,581,670		733,625	17.15
by Comp	anles whic	h in 1938 r	nade 98.67	% of Open-	Hearth an	d 99.90% of	Bessemer.
1,634,224	30.28	99.941	18.27	1,734,165	29.17	391,459	
572,009		125,443	25.39	1,697,452		424,363	
,846,517	34.21	157,687	28.82	2,004,204		452,416	
.786,942	34.19	132,100	24.93	1,919,042	33.34	447,329	4.29
,839,692	/	515,171		7,354,863		428,855	17.15
669,455	30.93	131,422	24.02	1,800,877	30.30	406,519	
1.513,715	28.96	119,128	22.48	1,632,843		380,616	
1,846,319	34.29	127,998	23,45	1,974,317		446,678	
,340,363	43.36	196,739	35.96	2,537,102	42.68	572,709	
440,192	46.80	206,937	39.15	2,647,129		618,488	
,882,827		223,158	40.78	3,105,985		701,125	
.357,167	64.23	201,196	37.97	3,558,363		829,455	
,971,834		158,912	29.11	3,130,746	52.79	708,314	
.861,564	40.71	1,880,661	29.20	27,742,225	39.65	532,072	52.14

of capacity operated for 1939 are calculated on weekly capacities of 1,243,153 gross inguls and 122,248 gross tons bessemer ingots; total, 1,365,401 gross tons; based tites as of Dec. 31, 1938, as follows: Open-hearth ingots, 64,817,994 gross tons; 6,374,000 gross tons.

If capacity operated for 1938 are calculated on weekly capacities of 1,218,342 gross in ingots and 123,514 gross tons of bessemer ingots; total, 1,341,856 gross tons; capacities as of Dec. 31, 1937, as follows: Open-hearth ingots, 63,524,356 gross logis, 6,440,000 gross tons.

# PRODUCTION

■ STEELWORKS operations last week dropped 2 points to 47 per cent. Reductions were noted in three districts, increases in two, while seven showed no change. A year ago the rate was 30 per cent; two years ago 89 per cent.

Youngstown, O.—Receded 1 point to 42 per cent as one open hearth was taken off. A better rate is expected this week if coal mining is resumed.

Pittsburgh—Reductions by several mills lowered the rate 8 points to 36 per cent, partly due to the fuel situation. Carnegie-Illinois Steel Corp. has removed two more blast furnace stacks, leaving 14 of 50 active in the district.

Chicago-Slight adjustments by producers caused a drop of half a point to 46.5 per cent. Inland Steel Co. has banked one blast furnace and Carnegie-Illinois Steel Corp. two.

Detroit—Unchanged at 59 per cent, 14 open hearths being in pro-

Cincinnati—Steady at 52 per cent. No definite schedule has been formed for this week.

Birmingham, Ala. For the third week production held at 55 per cent, 11 open hearths active.

St. Louis-Remained at 51 per cent, no change being indicated for this week.

Buffalo-Incoming business was well balanced, with 35 per cent operations, the same as the preceding week.

New England—Continued at 45 per cent, the same schedule being set for this week.

Wheeling—Held at 64 per cent, with no indication of change this

Central eastern seaboard-Gained 1 point to 37 per cent. Tendency is toward a higher rate.

Cleveland—Rose 1 point to 45.5 per cent. This week the rate will be reduced 1 point or more.

# April Machine Tool Orders Drop 16 Per Cent

■ Machine tool orders in April were 16 per cent below those for March, according to the National Machine Tool Builders' association, Cleveland. The association's index dropped to 155.6, compared with 185.4 in March, and 167.1 in February. April's business, however, was well above that for the same month in 1938, when the index was 90.3.

Both foreign and domestic orders contributed to the decrease.

The three months' average trend is 169.4, slightly higher than the March figure of 167.8.

# **MEETINGS**

### PURCHASING AGENTS IN SAN FRANCISCO, MAY 22-25

■ NATIONAL Association of Purchasing Agents' twenty-fourth annual international convention will be held in San Francisco, May 22-25. Sessions are scheduled at the Fairmont hotel. Convention theme is "Present-Day Buying Problems in a World of Uncertainties."

Thurman W. Arnold, antitrust division, department of justice, will speak on "What Government Can Offer-What Business Can Expect"; and Prentiss L. Coonley, business advisory council, department of commerce, on "Government and Business-A Relationship in the

Making."

Dr. Rufus B. von KleinSmid, president, University of Southern California will give his views on "Behind the European Scene"; and Dean J. Hugh Jackson, Leland Stanford university, will tell "How War and Threats of War Affect Business and Prices."

Other scheduled speakers: Almon E. Roth, president, San Francisco Employers' council, on "Employer-Employe Relations as an Element of Business Uncertainty"; Robert W. Strauss, research staff, General Motors Corp., "What Scientific and Engineering Developments Will Do to Business"; Francis J. Curtis, Monsanto Chemical Co., "How Recent and Prospective Chemical Developments Will Affect Business.

May 23 has been designated "Purchasing Agents' Day" at the Golden Gate exposition. Seventy-five companies will exhibit in the Inform-a-Show in the Fairmont hotel.

### HARDWARE GROUPS TO MEET JOINTLY IN ATLANTIC CITY

National Wholesale Hardware association will hold its forty-fifth annual convention in the Marlborough-Blenheim hotel, Atlantic City, N. J., Oct. 16-19. National Association of Sheet Metal Distributors, an affiliate, having decided to combine its spring and fall meetings, will con-duct its annual meeting at the same place on Oct. 17. George A. Fernley, 505 Arch street, Philadelphia, is secretary of both associations.

American Hardware Manufacturers' association, Charles F. Rockwell, 342 Madison avenue, New York, secretary, will hold its semiannual convention at the same time and place, and the three groups will assemble in some sessions.

■ Four research associates soon will be named at Battelle Memorial institute, Columbus, O., according to Clyde E. Williams, director. Preference will be given college or university graduates who have specialized in physics, chemistry, metallurgy, fuels or ceramics. Appointments are for one year, may be extended a second year; salary is

# Steel Impresses Fair Visitors

NEW YORK

EVERYWHERE at the World's fair-from the 2100-ton perisphere and the 800-ton trylon to the smallest exhibit building—the visitor is impressed with the part steel and the metals are destined to play in the "World of Tomorrow."

The fair architecture, in general, does not follow the lines of some projected buildings of the future, which are expected to have the structural steel on the outside and the floors suspended from above. However, the United States Steel Corp.'s building appears to be turned "inside out," with the supporting structural steel exposed to view outside its stainless steel domelike exterior. General Electric Co. has covered its building with copper

### Offer Educational Exhibits

Both the Steel corporation and Bethlehem Steel Co. have comprehensive, educational exhibits. The former has as its theme "Steel thinks ahead" and the exhibit, arranged in panoramic form, successively presents the possible evolution of the highway, the factory, the farm, the city and the home of tomorrow. Bethlehem in a succession of animated exhibits shows how steel is made and how the many products available fit into man's everyday life.

The Metals building, a large section of which is occupied by Bethlehem, also houses a number of other important and interesting exhibits. An outstanding feature of the Yale & Towne Mfg. Co. display is a sunken stage in which electrical industrial trucks and hoists are demonstrated, and explained by motion pictures. John A. Roebling's Sons Co. demonstrates the use of wire rope with animated replicas.

Timken Roller Bearing Co. features a historical exhibit along with the latest applications of antifriction bearings. A dominant sculptural figure depicts the spirit of power transmission in the Link-Belt Co. exhibit. Copper & Brass Research association tells the story of "copper down through the ages." American Chain & Cable Co. illustrates the manufacture of pre-formed wire rope.

# Activities c Users, Mak

COMPLETION of Co.'s new 20,000-squar house in Pittsburgh, featured by a clinic deing practice with aluminum, nickel, bror. steel and brass and col ly 2000 attended, most ers and welding fo. manufacturing plants burgh district. A simil held at the company warehouse, May 12-13. be held at its Columb house, May 19.

Allis-Chalmers Mfg. kee, has been awarde contract for power mar installed in the power p ta dam of the Central mation project in Calif

Industrial division Co., Toledo, O., has mo York sales and service 111 Eighth avenue, in t thority Commerce built

Henry Forge & Tool N. Y., announces disconti operations. Arrangemen made to transfer all too to the E. D. Clapp M burn, maker of drop for

Koppers-Rheolaveur pers Co. affiliate, Pitts been awarded contract ditions to Franklin C Corp.'s Royalton, Ill., co plant. A dewatering sc installed, in addition to changes in the general

Meehanite Metal Co burgh, has established a South African Meehanite (Pty.) Ltd., at Johannes Africa. The subsidiary ized to grant manufacti for Meehanite metal to can firms, and has install ite manufacturing proce. plants in Transvaal.

New York district off eral Electric Co.'s air department, serving the lantic territory, has been from the General Electr 570 Lexington avenue, eral offices and works of ment at Bloomfield, N. J of the office, under V district manager, is unch

# N OF INDUSTRY

K. BAILEY, assistant r, Warner & Swasey d, has been appointed alr. He joined Warner ; a special apprentice vion from Oberlin col-In 1920 he left the com-Ito the retail store field ving year went to Oberinstructor of physical nd assistant football urning to Warner & 1922 as a salesman in territory, Mr. Bailey served as sales manland district: service d assistant sales manacceeds Clifford S. Stillecently became execu-

enbaugh has been made de superintendent, Alan Co., Conshohocken, Pa., C. E. Agnew, resigned.

entz, general manager, Plow Co., St. Louis, cted a director, succeed-W. W. Alexander.

kell has been advanced ant sales manager to er, Landis Machine Co., Pa.

Wacker has joined the telle Memorial institute, ), and has been assigned mic division.

Michaelson, engineer in division, Allis-Chalmers Milwaukee, has been apnager of its district of-Lake City, Utah.

nds has been placed in the new field office esby International Nickel t 67 Wall street, New wer the Central Atlantic

e A. Millikin and C. H. both of Cleveland, have l vice presidents, Youngs-Door Co., Youngstown, ikin formerly was treasfir. Williamson, assistant ent. W. H. Rosenbush lected treasurer and ascretary.

nheimer, formerly in the coke department of es Steel Corp., Ecorse,



Walter K. Bailey

Mich., is now representing the Ironton Fire Brick Co., Ironton, O., in Virginia, West Virginia and western Pennsylvania.

Dr. Zay Jeffries, technical director, incandescent lamp division, General Electric Co., Cleveland, has been elected to the National Academy of Sciences, the ranking honor scientific organization in America. He has been associated with the General Electric Co. since 1914 and from 1915 to 1936 was affiliated with the Aluminum Co. of America. Since 1936 Dr. Jeffries has been chairman of the Carboloy Co. Inc., Detroit, a General Electric subsidiary, and for four years prior to that was its president.

Walter Geist, since 1933 general representative, Allis-Chalmers Mfg. Co., Milwaukee, in which capacity he supervised the personnel of all district offices, has been elected vice president. Mr. Geist joined the



Walter Geist

firm in 1909 as an errand boy in the saw mill engineering department, advancing through various positions and departments in the company. He originated the idea of the multiple V-belt power transmission drive known as the Texrope drive.

H. E. Lewis, chairman of the board and president, Jones & Laughlin Steel Corp., Pittsburgh, has been named a member of the National Association of Manufacturers' committee on industrial practices.

Walter R. Owen, for 28 years assistant purchasing agent, Rock Island railroad, Chicago, has been promoted to purchasing agent, succeeding the late F. D. Reed. James C. Kirk succeeds Mr. Owen as assistant purchasing agent.

William H. · Alderdice has been elected secretary and assistant treasurer, Commercial Shearing & Stamping Co., Youngstown, O. to succeed his brother who has been ill. All other officers have been reelected.

R. F. Moody, the past two years a member of the development department, Carrier Corp., Syracuse, N. Y., engaged in research on oil burner and residential air conditioning, has joined the sales department of Wolverine Tube Co., Detroit.

C. B. Rogers, 1000 Peachtree street, N.E., Atlanta, Ga., has been appointed representative by the Ward Leonard Electric Co., Mount Vernon, N. Y., to handle sales of its electric control devices in Georgia, South Carolina and North Carolina.

R. W. Eichenberger, vice president, Robins Conveying Belt Co., formerly acting as manager of the company's Chicago office, has been transferred to the New York office where he will collaborate in general sales management for the company with H. Von Thaden, vice president.

John R. Read, heretofore vice president, has been elected president, Canadian Westinghouse Co. Ltd., Hamilton, Ont., succeeding Paul J. Myler, who had been chairman of the board and president. Mr. Myler continues as chairman. N. S. Braden, formerly vice president, has been elected vice chairman.

P. J. Garlent, formerly assistant works manager, Federal-Mogul Corp., Detroit, is now works manager, succeeding J. B. Brussell. P. J. Potter has been appointed foundry superintendent, succeeding Frank J. Coyle. C. M. Heath, formerly associated with Battelle Memorial institute, Columbus, O., has succeeded Mr. Potter as metallurgist.

John A. Leisk, superintendent of foundries and pattern shops, Allis-Chalmers Mfg. Co., Milwaukee, recently celebrated completion of 50 years of service with the firm. He started when 15 years of age as an apprentice in the foundry of the E. P. Allis Co., predecessor of Allis-Chalmers.

A. H. Burnap, 940 Lancaster avenue, Syracuse, N. Y., and Eric N. Gilling, post office box 4197, Pittsburgh, have been appointed sales representatives by American Flexible Coupling Co., Erie, Pa. Mr. Burnap will cover central New York state, and Mr. Gilling western Pennsylvania and West Virginia.

Wilfred F. White heretofore assistant manager, has been appointed manager, lighting division, Westinghouse Electric & Mfg. Co., in Cleveland, to succeed Frank R. Kohnstamm, who has been made sales manager, merchandising division, at Mansfield, O.

Mr. Kohnstamm, succeeds R. E. Imhoff, resigned. L. E. Osborne has been named manager of manufacturing and engineering of the merchandising division.

R. S. Ahlbrandt has been appointed sales, manager, Pittsburgh district, Allegheny Ludlum Steel Corp., Pittsburgh, succeeding J. R. Kumer Jr., who has been named assistant manager of stainless bar and wire products. Mr. Ahlbrandt joined the company at the Watervliet, N. Y., plant in 1934; was transferred to the Cleveland sales office, remaining there from 1936 to 1937, and later went to Pittsburgh as district representative.

Mr. Kumer started with Allegheny Ludlum in 1926, in the steel

foundry sales department. In 1932 he was placed in charge of the general sales department, Pittsburgh territory.

Howard M. Givens Jr., heretofore assistant manager of sales, stainless bar and wire products, has been named assistant general manager, tool steel sales, Mr. Givens was employed by Midvale Co., Philadelphia, 1931 to 1936, then joined the former Allegheny Steel Co. as a salesman in the stainless bar and wire products department. His headquarters will be at the Watervliet plant.

R. C. Robertson has been appointed assistant general sales manager, Airtemp division, Chrysler Corp., Dayton, O. E. D. Knowles, formerly a sales executive of Dodge division in Detroit, has been named manager of Airtemp's Dayton regional office. Mr. Robertson goes to Dayton from the Airtemp New York region, where he was regional representative.

Stuart M. Crocker has been named manager, air conditioning department, General Electric Co., Schenectady, N. Y. He has been associated with executive divisions of the company since 1921. He has relinquished his duties as assistant to executive vice president, but remains a vice president of International General Electric Co., to which post he was elected in 1930. His headquarters will be in Bloomfield, N. J.

Harry F. Devens, chairman of the board, and John Jenkins, vice president and secretary, Oliver Iron & Steel Corp., Pittsburgh, have reired from active service. Mr. Jenkins, associated with the company over 52 years, remains as director.

New officers elected: Theodore F. Smith, president; H. O. Rea and J. C. Rea, vice presidents; L. E. Uhrich, secretary and controller;

W. F. Roll, treasure assistant secretary; assistant treasurer.

John H. Bruinsma Mich., has been el-Panyard Piston Ring Mich., succeeding D who now occupies a president, after sery the business ten y Black, heretofore wi Corp., Muskegon, I secretary-treasurer company, succeedin of Manistee, Mich.

Charles F. Newp dent and general National Screw & M land, has been ele American Institute O Rivet Manufacture Harry O. McCully, g of sales, Russell, Bu Bolt & Nut Co., Port has been elected vice institute. Herman H. as executive vice James D. Eggers as urer.

T. E. Barlow has metallurgical engine and Steel Developm with headquarters Since 1936 Mr. Barl research engineer a morial institute, Col prior to that was ch. of a large auton foundry in Detroit. a member, America Metals and American association.

C. H. Michel, M Building Corp., Baltinamed president, Stetimore. H. R. DolLaughlin Steel Corp., vice president, and ger, secretary-treasuring directors have Emory Landon, Sealron Corp.; Josephem Steel Co.; R. W Rustless Iron & Steel C. Saunders, Marylaiucts Co.

James A. Sargent, president, Sharon Stahas been in Detroit years in a special sale returned to the ger Sharon, Pa. He joine in 1930 as superint cold rolled strip mill thereafter became as the sales department.

Howard S. Gier has ed district manager of Detroit office. He becauth the Sharon of February, 1923, spe



R. S. Ahlbrandt



J. R. Kumer Jr.



Howard M. Givens Jr.

ills and general office. was placed in charge de department. In 1932 e Detroit sales office. resent promotion he indistrict sales manager

has been appointed president, with headetroit, where he preerved as district man-

il has been appointed manager, power pip-Blaw-Knox Co., Pittschanical engineer with rience in power plant ork, Mr. Horrell was th the Grinnell Co., R. I., the past nine design and sale of



A. J. Horrell

piping for high presperature service.

Cobb, the past several al factory manager, goods plants, United r Co., New York, has general manager of the oods and general prod-A graduate of Stevens Technology, Mr. Cobb mpany in 1914.

Smith, vice president, supervision of all ace divisions.

gan, manager, rail and epartment, Robert W. hicago, and G. E. F. ef, chemistry division, au of standards, Washbeen nominated for nd vice president, re-American Society for erials. Among nominees cutive committee are: chief chemist, mechancoods division, Firestone er Co., Akron, O.; T. S. leer of materials, works General Electric Co., N. Y.; and J. L. McCloud, metallurgical chemist, Ford Motor Co., Dearborn, Mich.

Henry J. Mokate, associated with subsidiary companies of United States Steel Corp., since 1920, and the past year manager, secondary products division, Carnegie-Illinois Steel Corp., Pittsburgh, has been named manager, merchant products bureau, sheet division, Carnegie-Illinois. Charles Schramm, associated with corporation subsidiaries 37 years, and since 1936 a salesman in the New York offices of Carnegie-Illinois, succeeds Mr. Mokate manager, secondary products divi-

A. L. Riemer, vice president, Wisconsin Bridge & Iron Co., Milwaukee, has been elected president and treasurer, to succeed Herman A. Wagner, who has retired from active duty but remains a director. J. A. Schoenecker, secretary, has become vice president to succeed A. B. Walling, con-Mr. Riemer. tracting engineer in charge of the Chicago office, has been made a vice president, replacing E. D. Coddington, retired. E. F. Barkow, in charge of drafting room and plant operations, has been named secre-

# DIED:

■ BENJAMIN GILBERT FOL-LANSBEE, 88, one of the founders of Follansbee Bros. Co., Pittsburgh, in that city, May 10. Until his retirement in 1933, Mr. Follansbee was chairman of the board. He began his business career with the Pennsylvania railroad, later going with the Pittsburgh & Lake Erie railroad. He then joined Park, Scott & Co., which manufactured sheet and bar copper and dealt in ingot copper, pig tin, pig lead and other metals. Subsequently the firm changed its name to James B. Scott & Co., and Mr. Follansbee became a partner. In 1894, after Mr. Scott's death, Mr. Follansbee and three younger brothers formed Follansbee Bros. Co. He served as president until 1916 when he became chairman. He was a director of Follansbee Bros., Sheet Metal Specialty Co., and other interests.

Albert I. Carney, 53, president, Rim & Wheel Service Co., Detroit, recently. He was a director, National Wheel and Rim association.

Grant Monk, 48, superintendent, rail mill, Carnegie-Illinois Steel Corp., Gary, Ind., in Gary, May 10. He had been with the company's Chicago office from 1920 until a year ago, when he was transferred to Gary.

William E. Richardson, founder and president, Richardson Machine Co., Birmingham, Ala., in that city, April 23.

Peter Devries, 59, the past 22 years associated with Walter D. McKenzie in the Trio Tool Co., Detroit, in that city, recently.

Clifford Lincoln Snyder, 46, sales engineer, L. A. Young Spring & Wire Co., Detroit, in that city, May 2. He was a member, Society of Automotive Engineers.

John Jameson Gibson, 60, retired vice president, Westinghouse Electric Supply Co., Philadelphia, May 6 in that city.

Ely Joseph Contois, 51, Chicago district sales manager, Clark Equipment Co., in Chicago, recently.

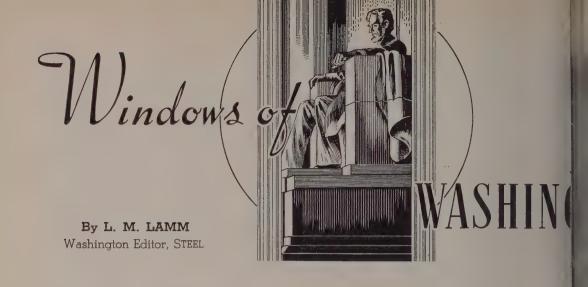
John B. Beall, 64, president, Beall Engineering & Mfg. Co., tank and pump manufacturer, Cleveland, in Cleveland, May 3.

Alois Murawsky, 69, traffic manager, National Enameling & Stamping Co., Milwaukee, associated with the firm 40 years, in that city, recently. He retired from active duty a few months ago.

Thomas William Murphy, former district manager in Michigan for Youngstown Pressed Steel Co., Youngstown, O., and later representative of United States Gypsum Co., Chicago, in Detroit, recently.

Alexandre Dreux, 87, honorary president, Societe des Acieries de Longwy, of which company he was active president for many years, vice president of the Comite des Forges de France, and president of the Chamber of Commerce of Nancy and the Economic Region of the East of France, recently at Chateau Mont-Saint-Martin, near Longwy.

Jackson Davis Allen, 52, manager of sales, cold finished products, Jones & Laughlin Steel Corp., Pittsburgh, in Pittsburgh, May 10. His entire business experience had been with Jones & Laughlin, starting in 1903 in the order and shipping department. In 1910 he was transferred to the cold finished sales department and was named manager in 1930. He was a member, Duquesne club, Pittsburgh Athletic association, Pittsburgh Chamber of Commerce, and United States Chamber of Commerce.



WASHINGTON
attitude toward business appeasement was clearly indicated by Harry Hopkins, secretary of commerce, at press conference last week. Mr. Hopkins met newsmen a half hour after his return from a weekend cruise on the POTOMAC with the President and Supreme Court Justice William O. Douglas. Mr. Hopkins' statements were interpreted as reflecting the Chief Executive's attitude.

That the President was much annoyed by the speeches and resolutions adopted at the United States Chamber of Commerce meeting here is well known. The commerce secretary obliquely criticized the chamber's pessimism and attitude, cited residential building figures, which, he said, indicated a material pick-up in business.

Mr. Hopkins refused to make any positive statements, but there was no doubting his change in attitude.

### **Defends Spending Policy**

He was asked several times if he stood on or repudiated his recent Des Moines speech. He replied he had nothing to say.

He was asked if it would be a correct interpretation of his attitude to state that business could improve despite many government restrictions.

"I think," said Mr. Hopkins, "the powerful economic force that surrounds this whole business here isn't so simple. You put it in altogether too simple terms. It cannot be put as simply as that. Here is what I don't want to do this morning: I don't want to seem to be avoiding any questions, but I haven't had a chance to even talk to anybody."

The secretary was asked if he still believed continued government spending is necessary at the rate at which it is now going on.

"I think that during the coming 12 months," he replied, "it is extremely important that the fiscal policy of the government be carried out. Now that is one phase of the program. The other phase of the program would be to do everything we can to stimulate the use of private funds, because, obviously, the fiscal policy by itself, important as that may be, in my judgment it won't do the whole trick."

Effort was made by the newsmen to get the secretary to forego his general statements to the effect that the government program was helping business and to show some definite way in which this was being accomplished. He was asked if he thought that business appeasement by the administration is impossible.

"I think in the first place," he said, "that the language (meaning the word appeasement) was created by our opponents, and quite deliberately created, in my opinion. Certainly this administration wants to see and has great confidence that this private economic system can work. We are not discouraged about it. Now it isn't easy and it isn't simple. There are many complicated factors in it, but I simply don't understand the state of mind of people with a nation of all our great resources who take a defeatist attitude that this private economic system cannot be made to work, because I think it can be made to work."

# General Wood Resigns

Changes are occurring swiftly at Mr. Hopkins' department. The President proposed taking away a number of bureaus under his second reorganization plan; Gen. R. E. Wood of Sears Roebuck resigned as special business assistant; Richard E. Patterson Jr. reportedly will resign as assistant secretary to re-enter private business. While Mr. Patterson will give as his reason the fact that the foreign commerce service has been removed from the commerce department to the state department, it is known this is not the real rea-

son. It has become a Mr. Hopkins have reye on a number of and it has appeared Patterson would ha actual resignation tendered but it is expense.

General Wood has ington about a mont been able to turn a of the uncertain si commerce departmen Bob" and "Dear Har Mr. Hopkins' illness a of the two to get tog for General Wood's matter goes far dee Apparently, Genera found the very con tion which exists wit ment of commerce istration in its attitue ness, and General 1 want to lend his nan of machinations wh comtemplated.

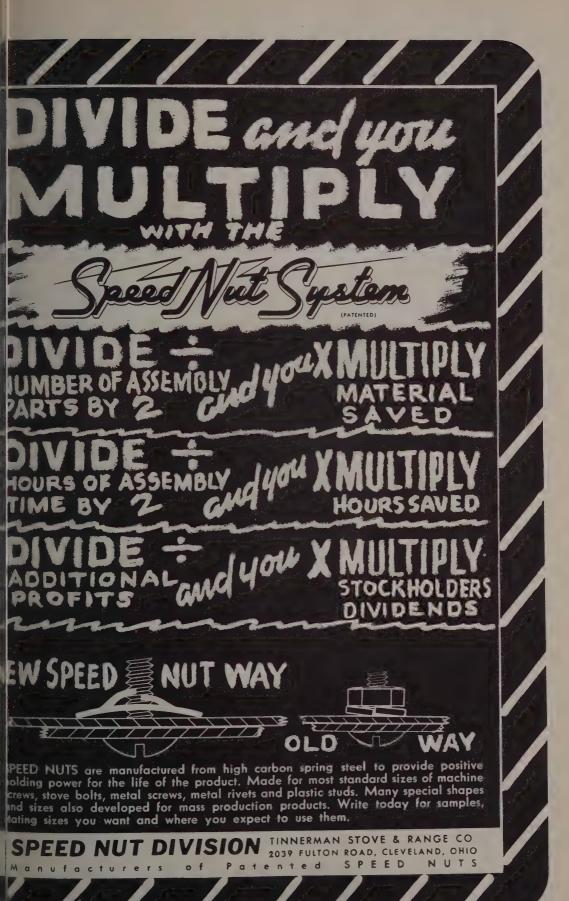
### SECOND REORGAN PLAN SENT TO CO

The President last second government plan to congress. grumbling, it will be

It proposes trans! eign commerce service partment of commerce department.

Opinion differs as a is a good or bad mov commerce service we more than 25 years at request after the state service had prove However, a lot of we under the dam since. Ly the state departme sincere effort to deli insofar as foreign concerned.

Commerce Secretar lieves the consolidate vide American busing vastly improved instruwhich to promote trade. I am satisfied



will strengthen government facilities for helping American exporters meet the demand of a new day in international relations."

# SAYS AVIATION'S FUTURE DEPENDS ON BERYLLIUM

Andrew J. Gahagan, president, Berryllium Corp., Temple, Pa., appeared last week before the temporary national economic committee to tell about the patent situation and the difficulties which new enterprises frequently encounter.

Mr. Gahagan explained the importance of beryllium nickel to the advancement of aviation.

"The Germans are considerably more advanced in the use of this alloy for airplane construction," he said, "but we hope to be in commercial production in a few weeks and hope to make this material available to the American public and to the army and navy for secret uses, which I won't go into here."

Use of the light and strong metal in the construction of an airplane, he said, permits the use of a more powerful motor by reducing vibration to a minimum.

Emphasizing Germany's use of the metal for aviation purposes, Gahagan said:

"The future of aviation largely depends on beryllium nickel. Planes that will cruise at 500 miles an hour are being designed now. Until recently Germany was the only country who knew how to develop beryllium nickel and copper, but we are perfecting the process in this country now."

Gahagan said that although Italy and France were discovering the use of beryllium nickel, it has not yet been used for aviation purposes in those countries.

# STRATEGIC MINERALS BILL SENT TO CONFERENCE

Senate has refused to accept house amendments to the strategic minerals bill and has sent it to conference. Conferees include Senators Thomas, Utah; Johnson, Colorado: Schwartz, Austin and Gurney. House conferees have not yet been appointed.

## HOUSE PASSES \$773,000,000 NAVY EXPANSION BILL

House last week passed the naval appropriation bill calling for a \$773, 420,241 navy expansion, one of the biggest ever made during peacetime. In addition, \$58,300,000 was made available to the navy in contract authorization, giving a grand total of \$831,720,000 which will be available beginning July 1.

Funds for constructing two 45,000-ton battleships, largest in the world, were included in the bill, along with 21 other warships and 500 planes. Provision also was made

for a chain of strategically located bases and money was appropriated for regular routine maintenance.

The navy appropriation bill provided \$2,071,600 for machine tools to be used under the direction of the bureau of engineering and the bureau of construction and repair.

Included also in the bill is an appropriation of \$6,000,000 for current replacement of machine tools and repairs to naval shore stations and also an appropriation of \$5,000,000 for collateral expenses including machine tools incident to construction financed with WPA and PWA funds.

### Need \$16,000,000 for Tools

In the budget estimates of 1939, the bureaus of construction and repair and engineering reported \$16,-000,000 for machine tool equipment was necessary to bring navy yards to a satisfactory state of material readiness and recommended liquidation of these deficiencies at the rate of \$3,200,000 per year. For 1939, \$3,798,000 was actually appropriated for machine tools and is now being expended. Only \$2,800,000 is now in the present estimates. Approximately, \$1,000,000 additional for machine tools was in the original departmental estimates.

Navy experts appearing in executive session before the house appropriations committee, stated continuation of the program of machine tool rehabilitation is vital to new ship construction and to the upkeep of the fleet.

Funds to complete the retooling of the torpedo station at Alexandria, Va., totaling \$1,260,000, are in the estimates.

Admiral Bowen, chief of the bureau of engineering of the navy department, had the following to say about manganese production:

"The bureau of engineering has been watching, with interest, the development of methods to produce pure manganese. Conferences and correspondence with the bureau of mines confirm the fact that manganese of high purity has been produced by an electrolytic method. The small quantity thus far produced has been utilized in tests under the direction of the bureau of mines.

"It is understood that a sufficient quantity of manganese for tests for commercial applications will soon be available from a plant in Knoxville, Tenn. It is further understood that manganese alloys with desirable characteristics have been produced under the direction of the bureau of mines.

"The bureau of engineering will perform tests of such manganese alloys as may become available to determine their suitability for service in machinery u

"Tests to determine chanical, and corroselectrical conductivity ance and corrosions teristics will be conducted or atories at the navexperiment station are search laboratory a conduct the above test duce small castings a such castings experiments."

"As soon as reports of tests conducted by mines on alloys alre and the pure mang available, the bureau will take early act samples. Tests to suitability of alloys, m copper, for turbine bloys of manganese wi and aluminum for selectrical and machine be initiated.

"It is believed that of pure metals may perior products.

"It is believed that can be accomplished do be handled by the fapresent laboratories a cost in operation."

# FTC STUDIES RESAL PRICE MAINTENAN

Investigation of rest tenance as practiced rious state "fair trac' is being conducted an tinued in the next of the federal trade com

A commission resolinvestigation of the and methods of the dresale price maintena

## MAY EMBARGO EXI OF SCRAP TO JAPA

Rumors continue ministration is consisted bargo on scrap experimental bargo may hinge gress does on neutral does not act on scrap possible the President other means of effect embargo.

# GOVERNMENT IRON PURCHASES TOTAL

During the week engovernment purchase worth of iron and sunder the Walsh-Heal lows: American Roll Middletown, O., \$11 caster Iron Works Ir Pa., \$69,840; Nation Pittsburgh, \$18,331.4 mingham Mfg. Co. ham, Ala., \$23,996; Al Apollo, Pa., \$16,456.3 and Hayes Body Rapids, Mich., \$16,775

# ION

# THLDING, ORDERS, ANSION ACTIVE

terminal at North mmer will give New of the world's largest pped airports. With both land transports ats, it will clear pasili North and South the Bermuda and Eur-

ngars, each 165 x 350 occupied by American iscontinental & West-United Airlines. Trus-Youngstown, O., now r these hangars weld-yy doors, weighing in tons.

le 550-acre field began mes has required up in Its lighting, radio, achine shops will derable equipment.

gress is being made rument, municipalities ial carriers in improvion's airfields. Since he year, civil aeronauy has approved exfederal funds aggreboo,000 for runways, other facilities.

ailders continue to exnal Aircraft Corp., Ft. last week awarded conecting at San Antonio, to cost \$200,000. The jects to produce four les a week.

Aircraft division of ane Co., Wichita, Kans., build a one-story, 100 x 150-foot factory addition costing with machinery more than \$85,000.

Preferred stock amounting to \$670,000 has been marketed by Fairchild Engine & Airplane Corp., New York, the proceeds going into working capital and production equipment needed by its Fairchild Aircraft and Ranger Engineering subsidiaries.

Aircraft Accessories Corp., Glendale, Calif., has acquired and will remodel the Kansas City, Mo., plant of Thomas L. Siebenthaler Mfg. Co., installing new machinery for making airplane radio equipment and other accessories.

### Will Build Fighting Craft

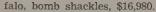
American Armament Co., Rahway, N. J., has filed with SEC its intention to increase its capital preliminary to entering the aircraft field. Company plans to construct an experimental twin-engined fighting plane, armed with its latest hydraulic-recoil aerial cannon.

Pratt & Whitney-powered combat craft have been entered in air corps competition at Wright field, Dayton, O., by North American Aviation, Vultee division of Aviation Mfg. Corp., and Curtiss-Wright. Bids were for lots up to 1000.

Government orders for aeronautical equipment last week included: For war department, Pollak Mfg. Co., Arlington, N. J., solenoid assemblies, \$18,439; Eclipse division of Bendix Aviation Corp., Bendix, N. J., supercharger regulators, \$9250; Aerial Machine & Tool Corp., New York, plungers, \$16,900; and for the navy, Kollsman Instrument Co. Inc., Elmhurst, N. Y., generators, \$42,432; Pioneer Instrument Co. Inc., Bendix, N. J., octants, \$23,500; Spriesch Tool & Mfg. Co. Inc., Buf-

# Testing Steel For Aircraft

New equipment recently installed in Lockheed research laboratories at Burbank, Calif., includes this Southwark-Tate-Emery universal testing machine, used to determine strength factors of aircraft materials. Eighteen feet high, it has 300,000 pounds compression and tensile capacity. Here it is shown testing elasticity of an alloy steel rod and recording its stress-strain curve



Substantial contracts are anticipated by airplane engine manufacturers from the French air ministry's newly-arrived military mission. Its last mission placed orders for 700 fighting planes and 1000 engines.

Allison Engineering division of General Motors, Indianapolis, has developed for military use a 24-cylinder, 2400-horsepower double-V aircraft engine. Liquid-cooled, it is reported to weigh less than 1 pound per horsepower. Wright Aeronautical Corp. and Pratt & Whitney division of United Aircraft both are said to have perfected new 18-cylinder radial engines developing 2000 horsepower. Maximum rating heretofore has been 1600 horsepower.

A new cabin steamheating device announced by Solar Aircraft Co., San Diego, utilizes waste heat from the exhaust stack to fire flash boilers which feed steam radiators in the cabin air ducts.

# Eleventh Annual Bridge Competition Announced

■ Eleventh annual competition to select the most beautiful bridges completed in 1938 has been announced by American Institute of Steel Construction Inc., 101 Park avenue, New York.

Prizes will be awarded in four classes: A, bridges costing more than \$1,000,000; B, costing from \$250,000 to \$1,000,000; C, costing under \$250,000; D, all movable bridges.

A jury of architects and engineers will make the selections from photographs. Entries close June 1. Photographs should be accompanied by following data: Name of bridge location, total cost, engineer, fabricator, owner, date completed, date opened to traffic, span length and roadway width.

# Norton Co. Invites 10,000 to Open House

■ Open house for employes and relatives, and for a group of industrialists, educators, professional people and others, was scheduled by Norton Co., Worcester, Mass., for Saturday, May 13, and Monday evening, May 15.

Employes and relatives were welcomed to the plant Saturday, escorted through the administration building and plants 1, 2, 3 and 4. An exhibit of products, safety and welfare equipment, and precision instruments was arranged. Ten thousand persons were invited.

Business and professional people will visit the administration building and plants 1 and 3 Monday evening.





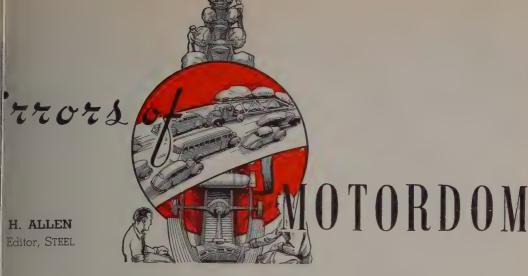
# BUT NEVER TROUBLE FOR HYATTS

Toil, however punishing, never spells trouble for Hyatt Roller Bearings. These durable and precisely built bearings maintain their efficiency, and the efficiency of related mechanism, under the most gruelling conditions of speed, stress and shock.

To the equipment builder they bring better design and manufacturing

economies — to the equipment chaser, longer machine life, dependable operation and massings in maintenance. All libenefit where and when Hyatt used. Hyatt Bearings Division, Go Motors Sales Corporation, Har New Jersey; Chicago, Pittsb Detroit and San Francisco.

# HYATT Roller BEARIN



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petronic of the production of the same of the first three reveals strikingly automobile productranslated into betchrysler's factory the three months cars and trucks, a net sales to 24 and net profit he per share profit on each unit of com-

iod last year.
In rate, virtually 90,is on the basis of
ears per year, or, figto average about 25,
year pace—considerthe output for last
cent under the 1937

pared with 48 cents

on the figures on a some idea of what a er realizes from his further how this further among supaxes and other example, Chrysler recrage for each car in the first quarter.

#### gh Production

gure, materials, parts dies, depreciation and arges and similar ex-79. Administrative, selling, advertising, eneral expenses re-\$47 per car. Provil, state and foreign ess profits taxes and stributed profits earr car. Stockholders \$16 per car; and \$27 to surplus. Thus, per car sold to dealquarter runs someer cent.

figures look good,

they emphasize again the fact that profits can be realized only if production holds up. Chrysler's output for the first quarter was well over twice that produced in 1938 during the same period, when factory shipments totaled 122,928. And in that period net profit was only \$2,109,969, less\_than 20 per cent of the 1939 figure.

It is interesting to note Chrysler's net sales for the first quarter were practically identical with those for this period in 1937 which was a boom year in automobiles. However, in the early part of 1937 sitdown strikes interfered to some ex-

tent with normal factory output, so the first quarter was not representative of the entire year.

Increasing tax load is demonstrated by Chrysler's provision of \$3,400,000 for the quarter to cover federal and state assessments, comparing with \$3,225,000 in the same period of 1937 when net sales were approximately the same as this year.

Retail sales of Chrysler in the first quarter naturally were not the equivalent of factory sales, since dealers were building up inventories to some extent for the spring selling season. Figures for total retail sales of cars and trucks show

#### Glass-Like Plastic Reveals How Steel Is Used



Pontiac Six with transparent body by Fisher, exhibited at New York World's fair. Fenders, hood, radiator and all of the door and body panels, ordinarily sheet steel, were made from a glass-like plastic. Windows raise and lower; doors open and close, while the engine and the rigid interior bracing of the unisteel turret-top are revealed in every detail. The car can be driven

178,618, an increase of 74 per cent over 1938, compared with more than 100 per cent increase in factory sales. Exports and Canadian shipments strangely enough were below the 1938 figures, 27,782 against 28,423.

■ USE of the phosphate type of treatment on engine parts to prevent scuffing during the initial wearing-in period is continuing to find wider acceptance. Graham has adopted what is termed a Thermoil Granodine No. 101 solution (American Chemical Paint Co.) for treating the sides of the lower end of connecting rods to prevent scuffing by obtaining a surface layer of iron and manganese phosphates integrated with the metal beneath, supplanting copper plating, formerly used for this purpose.

The process also is being adopted by some manufacturers of airplane and diesel engines for similar applications. Oldsmobile is using it on present camshafts, instead of copper plating, and "Chevrolet will set up equipment to treat camshafts for the 1940 line of engines. Studebaker likewise is phosphate treating camshafts of engines, and at least two builders of power plants for trucks and tractors are using the method on certain parts.

#### Working on 1940 Models

Preparatory work on new models is proceeding on a normal basis, according to field reports, despite the continuance of official comment that the 1940 model programs have been forgotten for the moment. Releases are being made on a number of parts for preliminary assemblies of bodies and other units. These pilot assemblies naturally are subject to change here and there but serve to line up the sources for various materials and parts and adjust schedules so that when the word is given to start production, no hitches will develop in receipt of necessary assembly line supplies.

Fender dies for some of the Chrysler lines have been placed and are now in process of construction, and last week it is understood that a body source received a large contract for a portion of the Chevrolet requirements for 1940 lines. You can still get plenty of bets around Detroit that it will be possible to see 'several of the 1940 models by July or early August.

Packard is reported to be giving consideration to launching two lines of its 120 model next year, a deluxe and a standard model, differing only in appointments and accessories. These would be in addition to the 115 or 6-cylinder model and the super-eight model now available.

Willys-Overland, according to com-

ment in this district, may offer a 6-cylinder engine line next year in addition to the present 4-cylinder series. The larger job naturally would be somewhat higher in price and aimed to compete on a more even basis with the Ford 60 series.

■ A NUMBER of interesting developments are being recorded in the powdered metals field. One plant here is proposing to fabricate automobile hardware from iron powder, compressing and sintering it and applying a plate by fusing a nickel powder or a ferrochrome powder

#### Automobile Production

Passenger Cars and Trucks—United States and Canada By Department of Commerce

	1937	1938	1939
Jan	399,186	227,130	353,946
Feb	383,900	202,589	312,141
March	519,022	238,598	389,489
3 mos	1,302,108	668,346	1,055,576
April	553,231	238,133	*352,000
May	540,377	210,183	
June	521,153	189,399	
July	456,909	150,444	
Aug	405,072	96,936	
Sept	175,630	89,623	
Oct	337,979	215,296	
Nov	376,629	390,350	
Dec	347,349	407,016	
Year	5,016,437	2,655,777	

\*Estimated.

 Estimated
 by Ward's Reports

 Week ended:
 1939
 1938†

 April 15
 88,050
 62,021

 April 22
 90,280
 60,563

 April 29
 86,640
 50,755

 May 6
 71,420
 53,385

 May 13
 72,375
 47,415

tComparable week

†Comparable week.		
	Week 1	Ended
	May 13	May 6
General Motors	27,120	27,260
Chrysler	17,690	17,590
Ford	16,900	16,900
All others	10,665	9,670

over the surface. The iron powder is produced from imported Swedish iron cakes, purified by the carbonyl process.

English interests have been visiting in this country with a view to ascertaining what has been accomplished in the production of iron powders domestically, and possibly arranging for licenses in the British Isles. Some powder is produced in England, but by a rather expensive process.

Last week in Los Angeles a pilot plant was demonstrated for producing iron powder by direct reduction of California ores with electricity and natural gas.

A plant in this district has been supplying the war department for test purposes a number of machine gun bullets made by compressing and sintering copper and tin powders, and then prelubricating them.

They are said to be cessful, because of retaining oil and the gun barrel.

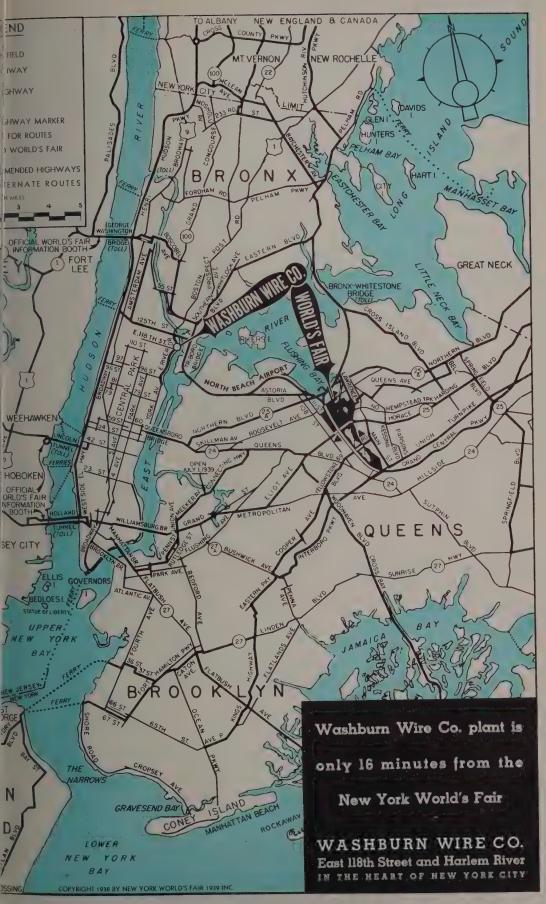
Proposals have erecting a plant in iron powder would large vertical tower mill scale down to company with suit ducing gas; then it der in an electric base of the tower at to produce a "was plant would have estimated 50 tons likely will be sever the proposition in iron power in a plant would have so it would have the proposition in iron power in it.

manufacturing we ed by Hudson last Barit, president, a hundred dealers he ments were piped where meetings w During the day, 2,614,165 came off Hudson plant. "Nobile company in Mr. Barit, "manuf proportion of chass for its cars. Hudso to produce its ent for steel bodies." He currently is 1400 c

Commenting on loys, Leslie Brown Fabricators division Aluminum & Bras Mich., observes that the magnesium sat today are used in the try.

Considered a be automobile parts be Auto-Lite Co., Tol net earnings equal for the first quarte April and May an uled for June indiable second quarter of R. G. Martin, company sells a list ferent parts, large electrical equipment facturers.

Control of Reo ir has changed hands time in a year wh headed by Thomas York attorney, line 552,954 votes agai shown for the prese The directorate was eight to nine mem the Campbell facti to the board, included Hall of Palo Alto Mayo, former Ford engineer; E. J. Con dent of Hayes Boo Robb, vice preside Car & Foundry Co born, former chie White Motor Co.



#### Steel For Sale Gains 64 Per Cent

■ FINISHED steel made for sale in the first quarter this year totaled 7,118,981 gross tons, 64 per cent more than 4,337,166 tons in the same period last year, and 2.26 per cent over the 6,961,157 tons in fourth quarter, 1938, according to the American Iron and Steel institute. Reflecting leadership in steel consumption by automotive builders, sheets constituted the largest tonnage.

Principal tonnages produced in the first quarter, and their percentages of the total:

	Gross Tons	Per Cent
Sheets	1,653,867	23.2
Heavy shapes	458,920	6.4
Standard rails	269,761	3.8
Bars	1,172,860	16.5
Tin plate	421,899	5.9
Strip	367,590	5.2
Plates	490,718	6.9
Wire	674,440	9.5
Wheels, axles, etc.	58,987	0.8
Skelp	87,885	1.2
Pipe	594,811	8.3
Wire rods	145,012	2.0
Black plate	80,307	1.1

Comparison of production with first quarter, 1938:

and quarter,	LUGO.		
			Per
	First	First	cent
	quarter	quarter	in-
	1938	1939	crease
Sheets	. 788,388	1,653,867	109
Heavy shapes .	. 307,795	458,920	49
Standard rails .	. 199,578	269,761	35
Bars	. 618,358	1,172,860	89
Tin plate		421,899	18
Strip		367,590	57
Plates		490,718	57
Wire	. 326,771	674,440	106
Wheels, axles,			
etc	. 38,492	58,987	53
Skelp	. 74,684	87,885	17
Pipe	. 488,057	594,811	21
Wire rods		145,012	93
Black plate	. 62,765	80,307	28

Figures include reports from 155 companies and represent 70 per cent of ingots produced by companies whose products are included in the tabulation. Total production, less shipments to members of the industry for conversion into further finished products, during first quarter was 6,427,671 tons, 53.6 per cent of finishing capacity. This compares with 33.3 per cent in first quarter, 1938, and 51.7 per cent in fourth quarter. Ingot production was at 54.14 per cent of capacity in first quarter, 31.58 per cent in initial quarter, 1938, and 40.68 per cent in final quarter last year.

#### 1938 Rail Tonnage Smallest Since 1933

Steel rail output in 1938 amounted to 622,895 gross tons, smallest since 1933, and only 43 per cent of 1,445,739 tons in 1937, according to the American Iron and Steel institute.

						PRODUCTION		
		r of nies			F1	rst (		
		Number of companies	Items	Annual Capacity Gross tons	Total	Per cent of capacity		
	Ingots, blooms, billets, slabs, sheet bars, etc	29	1	xxxxxx	618,075	xxx		
	Heavy structural shapes	8	2	4,691,800	458,920	39.		
	Steel piling	3	3	234,300	28,423	48.		
	Plates—Sheared and Universal	18	4	5,843,310	490,718	33.4		
	Skelp	7	5	*****	87,885	XXX		
	Rails-Standard (over 60 lbs.)	4	6	3,395,300	269,761	31,		
	Light (60 lbs. and under)	6_	7	418,500 105,000	19,599 3,889	14,8		
	All other (Incl. girder, guard, etc.)	14	- 8 9	1,290,550	96,460	29.		
	Splice bar and tie plates	34	10	XXXXXXX	671,558	XXX		
	Bars—Merchant  Concrete reinforcing—New billet	13	11	*****	178,089	XXX		
	Rerolling	.18	12	xxxxxxx	31,311	xxx		
	Cold finished—Carbon	18	13	xxxxxxx	113,798	xxx		
	Alloy—Hot rolled	14	14	*****	152,515	xxx		
	Cold finished	14	15	xxxxxx	13,574	xxx		
	Hoops and baling bands	4	16	*****	12,015	xxx		
	TOTAL BARS	53°	17	11,548,720	1,172,860	40.6		
	Tool steel bars (rolled and forged)	14	18	94,160	7,865	33.4		
	Pipe and tube—B. W	15	19	1,728,800	166,384	38.,5		
	L. W	11	20	1,428,380	64,240	18.0		
	Electric weld	4	21	615,000	28,963	18.8		
175	Seamless	15.	22	2,994,900	298,836	3.9.9		
Direc	Conduit	6	23	153,670	13,267	34.•5		
PRODUCTS	Mechanical Tubing	5.	24	182,300	23,121			
	Wire rods	18.	25	X X X X X X X	145,012 254,289	51,7		
STEEL	Wire—Drawn  Nails and staples	38.	26	1,967,535	147.304	54.5		
00	Barbed and twisted	16	28	428,075	49,747	.46.5		
	Woven wire fence	15	29	695,330.	68,713	39.5		
	Bale ties	11	30	110,680	8,284	. 29.9		
	All other wire products	5.	. 31	24,380	1,093	17,9		
	Fence posts	.12	. 32	134,700	12,623	37.,5		
1	Black plate	12	. 33	462,815	80,307	69.4		
	Tin plate—Hot rolled	.11.	. 34	1,585,360	122,195	30.8		
1	Cold reduced	10	35	1,878,200	299,704	63.8		
	Sheets -Hot rolled	.24.	36	*****	869,627	xxx		
	Galvanized	16	37	xxxxxx	275,052	xxx		
	Cold rolled	17	38	*****	409,856	xxx		
	All other	15.	39	X X X X X X X	1,653,867	60 1		
	TOTAL SHEETS	26	40	11,015,965		31.6		
	Strip—Hot rolled	23	41	3,074,300 1,095,910	242,728 124,862	45.6		
	Cold rolled		42	380,320	25,917	27.3		
	Wheels (car, rolled steel)	5.	43	425,900	9,221	8.7		
	Track spikes	11	45	302,350	21,690	28.7		
	All other		46	8,550	2,159	101.0		
	TOTAL STEEL PRODUCTS	134	47	xxxxxxx	7,118,981	xxx		
_	10000 1000 10000013	(can in	-1 -1	1				
	Estimated total steel finishing capacity based on a yield from ingots of		48	47,975,000	*****	.53.		
	Pig iron, ferro manganese and spiegel	128	49	xxxxxxx	892,540	xxx		
	Ingot moulds	14	50	*****	67,467	xxx		
	Bars	9	51	147,200	6,875	18.7		
CTS .	Pine and tube	3	57	97,730	9,047	37.0		

Sixteen rail mills operated last year, one less than in 1937. Five were in Pennsylvania, three in Alabama, two each in Ohio and Indiana and one each in New York, Maryland, West Virginia, Illinois and Colorado. More than half the rails made in

TOTAL IRON PRODUCTS (ITEMS 51 to 53)

All other

1938, or 331,727 tween 100 and 120 167,887 tons were 1 and 2252 tons were The remainder, 1 under 100 pounds parisons:

#### PRODUCTION OF RAILS BY PROCESSES

Gross Tons

	Oben 11				
		Rolled			
	Rolled	from	Bessemer	Rolled	
	from	new sec-	and	from	
Years	ingots	onds, etc.	Electric	old rails	Total
1915	1,766,039	9,129	326,952	102,083	2,204,203
1920	2,312,750	21,472	143,196	126,698	2,604,116
1925	2,678,536	13,287	9,687	83,747	2,785,257
1926	3,098,776	9,216	12,533	97,124	3,217,649
1927	2,712,287	5,578	1,566	87,055	2,806,486
1928	2,573,608	6,533	3,156	64,196	2,647,493
1929	2,651,397	10,766	4,209	55,766	2,722,138
1930	1,829,143	5,790	2,182	36,118	1,873,233
1931	1,132,433	3.118	828	21,372	1,157,751
1932	390,816	2,198	64	9,488	402,566
1933	388,420	9,372	300	18,204	416,296
1934	970,428	11,645	2,032	26,119	1,010,224
1935	684,661	7,004	565	19,307	711,537
1936	1,176,232	8,944	289	34,381	1,219,846
1937	1,400,831	10,824	625	33,459	1,445,739
1938	602,981	4,885	55	14,974	622,895

#### **Shape Capacity**

STEEL CO. has shut uctural mill to permit n work which will make hore than 200 per cent the mill's potential finrie. Part of a \$5,000,000 rogram, it is expected leted and in operation STEEL, April 3, p. 17).

it will greatly expand and sizes of company's utput. In addition to tems, nine entirely new Il be made and a numsent products will be greatly increased range

28-foot warehouse buildected recently, adjacent office in Weirton, W. onal space will allow oility in the structural tion, and also make it have products continuable to the company's

lucts of this mill will in-

from 4 inches and 13.8 inches and 37.7 pounds; beams, sections not exceedthes in depth and not

exceeding 84 inches in flange width. Car and shipbuilding channels, from 3 inches and 6.5 pounds; car center sills, all sections; car and shipbuilding bulb angles, 4 x 3½ inches and 11.9 pounds to 10 x 3½ inches and 347 pounds

3½ inches and 11.9 pounds to 10 x 3½ inches and 34.7 pounds.
Rolled tees, 2½ x 2½ inches and 5.1 pounds to 6½ x 6½ inches and 19.8 pounds; tees, split from beams, within the range of beam sections; zees, 3 inches and 6.7 pounds to 6 inches and 34.6 pounds; sheet and Z-piling, all sections

Standard I-beams will be rolled in sizes from 3 inches and 5.7 pounds to 24 inches and 120 pounds; standard channels, from 3 inches and 4.1 pounds Both of to 18 inches and 58 pounds. these products now are rolled in sizes to 12 inches.

All special sections will be rolled in the new plant within the range of the mill as is now the case, and present products, such as tie plates and angles from 3 x 2 x 1% inches, will continue to be produced.

#### Toolmakers Adopt New Replacement Policy

■ Hand tool manufacturers have adopted a new policy designed to eliminate unwarranted replacements of tools subject to abuse by users. Effective May 15, replacements of certain small tools will be made only at the factory. These include ratchet handles, hinged offset handles, hinged speeder handles, universal sockets and joints, tension or torque wrenches, tappet wrenches, pliers, screw drivers, punches and

chisels and similar tool items.

Under the new policy, jobbers or dealers will make no replacements. In case of request for adjustment, the tool user will be supplied with service postal cards to be sent, with the tool, to Manufacturers' Central Adjustment Service in St. Louis, San Francisco or Philadelphia, or to the tool manufacturer. If the tool is found to be defective in material or workmanship, it will be replaced or repaired and returned to the user. If found to have been subject to abuse, but still repairable, it will be factory reconditioned and returned at minimum charge.

In announcing the policy, the manufacturers take note of a growing tendency on the part of some mechanics and small hand tool users to expect them to withstand long and severe usage and almost any kind of abuse. Replacements, they point out, have reached an unbelievable percentage of gross sales.

Manufacturers co-operating: Blackhawk Mfg. Co., Bonney Forge & Tool Works, Bog Mfg. Co., Champion DeArment Tool Co., Duro Metal Products Co., Forged Steel Products Co., Herbrand Corp., Kraeuter & Co. Inc., New Britain Machine Co., Owatonna Tool Co., Plomb Tool Co., The Sherman-Klove Co., Snap-On Tools Inc., J. H. Williams & Co. and the Wright Tool & Forge Co.

#### iluth-Superior Welcomes First Ore Boat with Band and Speeches

past when the first iron f the season would steam Duluth-Superior harbor be welcomed with whistle n harbor boats—nothing tacular. Duluth on its Superior on its plains w the season had opened, be passively glad for

r, however, there was a is outburst of public enwhen Inland Steel Co.'s K arrived April 30.

watched the BLOCK

pass through the Duluth ship canal (lower right) and a still greater crowd assembled at the dock when the BLOCK drew up.

A committee of civic leaders, including Duluth's mayor, C. R. Berghult, railroad and marine officials, stepped forward and welcomed Captain Joseph Mathews, congratulated him on being master of the first ship, presented him with an inscribed framed picture of the Duluth harbor at night.

Speeches, music, applause, gayety! No staging or ballyhoo, this, but

the natural emotions of people whose welfare is bound up with Great Lakes commerce.

Opening of the season—when the boats arrive with coal, and depart with ore, when winter lethargy is thrown off and an industry springs into new life-was delayed unusually long this year, partly due to the coal strike. When at last the first boat showed up it was much like the sight of a sail to men marooned on a desert isle.

The BLOCK cleared with 14,500 tons of ore for Indiana Harbor, Ind.





# Oditorial

#### Quantity Extras Needed on More Products

IMPRESSIVE progress is being made by the warehouse distributors in bringing finished rolled steel to consumers. Steel's distribution statistics (May 8, page 15) show that warehouses in 1938 distributed 3,202,619 gross tons of finished steel, or 17.13 per cent of the total. In 1938, for the first time, more tonnage was distributed through warehouses than was accounted for by the leading consumer, automotive.

One reason for this showing was that business volume was subnormal in 1938. The amount of steel distributed by warehouses from year to year never reflects the ups and downs that apply to requirements of individual consuming classifications. This is because mill schedules in depression times provide for less frequent rollings of a given item, thus giving the warehouse a marked advantage in delivery time. Hence, the tonnage handled by warehouses in 1938 appeared much better in comparison to that going to industries which were at or near the bottom of their production curves.

#### Warehouse Provides Service That Promotes Efficiency in Distribution

But even after making such allowances, there is every reason to believe that the importance of the warehouse as a distribution medium is on the rise. For one thing, warehouses have become better merchandisers. More and more they are stocking all kinds and sizes of steel products that are used in their territories. Warehouses in many small cities now stock a good many items which formerly were carried only in key centers.

Warehouses render many services that save expense to the consumer. For example, warehouses are able to shear to closer limits than are obtained under the usual mill practice and flame-cutting services are almost universally available.

Current economic conditions also assist

the warehouse. Recent earnings statements by steel companies show the industry is in no position to indulge in wasteful practices. For one thing, the steel makers no longer can be indifferent to the high expense incidental to booking and filling small orders. Gradually the steel industry has been adopting policies that encourage the warehouse as specialists in taking care of requirements that are uneconomical from the mill standpoint.

This notably is the case with bars. For 3 tons of a size the mill price is the base. On 1 ton to 1000 pounds the mill extra is \$1 per 100 pounds. For less than 1000 pounds the mill extra is \$1.50. On the other hand, warehouses allow quantity differentials. Some warehouses, for example, deduct \$5 on 1 ton of a size and \$6 on 5 tons. Under this system their volume of bar sales is enhanced and the customer profits as well.

#### Mill Quantity Extras Help To Divert Small Lots to Jobbers

The mill extra system that promotes a more economical distribution of bars well might be applied to plates, shapes, sheets and other products with the same objective in mind. While mill quantity extras are applied to plates and shapes, the extras apply to a total order, either plates, or shapes, and thus encourage the combining of a number of small items to make up an order of 6000 pounds or more to avoid the extras effective on lesser quantities. The order extra, therefore, brings to the mill many small items costly to handle and at the same time deprives the warehouse of precisely the kind of orders it is best qualified to service.

In general, the warehouse should have encouragement whenever its services help to reduce distribution expense. In the end, the mills will get the business, but in the more desirable and profitable form.



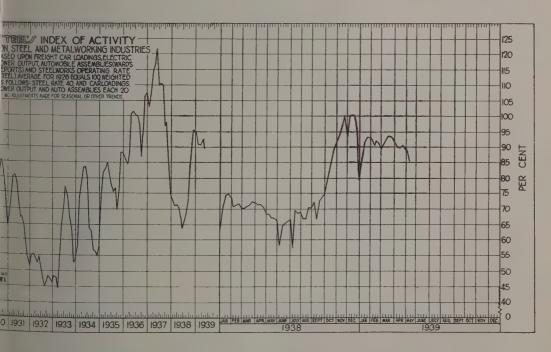
### emand Insufficient ck Downward Trend

t few weeks it has become increasingly bessimism has been overdone. The inion and building construction are both han they were a year ago, while retail developed a firmer tone. Strengthening and security prices are additional favorhich should not be overlooked. Any ento confidence, through either improved in Europe or constructive measures

in Washington would aid materially in stimulating industrial activity.

However, continued sluggishness in new demand is reflected in the downward or sidewised movement of most industrial barometers. This condition in the iron, steel and metalworking industries caused Steel's index to recede 4.1 points to 85.1 in the week ended May 6. The current level of activity represents a decline of 15.5 per cent from the peak last year recorded in the week ended Dec. 10, but it is still 24.2 per cent above the comparable week last spring.

Steelmaking operations remained unchanged at 49 per cent in the week ended May 6 to bring to a temporary halt the downward tendency of the preceding six weeks. However, steel consumption continues to recede seasonally with the result that the national steel



TBEL'S index of activity declined 4.1 points to 85.1 per cent in the week ended May 6

1939 91.1 89.3 91.5 92.7 93.3 93.2 92.2 90.0 89.7 90.4	1938 71.9 70.3 70.1 70.8 71.3 72.4 72.0 71.3 71.4 70.8	Aug Sept	 1938 73.3 71.1 71.2 70.8 67.4 63.4 66.2 68.7 72.5	1937 102.9 106.8 114.4 116.6 121.7 109.9 110.4 110.0 96.8 98.1	1936 85.9 84.3 88.7 100.8 101.8 100.3 100.1 97.1 86.7 94.8	1935 74.2 82.0 83.1 85.0 81.8 77.4 75.3 76.7 69.7	1934 58.8 73.9 78.9 83.6 83.7 80.6 63.7 63.0 56.9	1933 48.6 48.2 44.5 52.4 63.5 70.3 77.1 74.1 68.0 63.1	1932 54.6 55.3 54.2 52.8 54.8 51.4 47.1 45.0 46.5 48.4	1931 69.1 75.5 80.4 81.0 78.6 72.1 67.3 67.4 64.3	1930 87.6 99.2 98.6 101.7 101.2 95.8 79.9 85.4 83.7	1929 104.1 111.2 114.0 122.5 122.9 120.3 115.2 116.9 110.8
89.7 90.4 89.2 85,1		Sept Oct										110.8 107.1 92.2 78.3

#### THE BUSINESS TREND-Continued

rate should ease to slightly lower levels through May. Despite the sharp drop in automobile production to 71,420 units in the week ended May 6, output remained 34 per cent ahead of the comparative figure last year. The downward movement in assemblies the past few weeks confirm earlier indications that the peak in 1939 model output was reached in the week ended April 22. The Automobile Manufacturers' association reports that factory sales declined 8 per cent in April to 359,200. For the first four months this year factory sales totaled 1,414,776 units, an increase of 56 per cent over last year. An adverse factor in the automotive outlook is the expanding used car stocks, reflecting the failure of sales to come up to seasonal expectations.

#### AVERAGE DAILY INGOT OUTPUT DECREASES

The daily average ingot production during April was 119,479 gross tons, based on the total output for the month of 2,986,985 gross tons reported by the American Iron and Steel institute. This compares with a daily average of 124,625 in March and 74,045 tons in April, 1938. Ingot operations last month averaged 50.99 per cent, down from the March average of 56.14 but remained well above the April, 1938 average of 33.34

per cent. Average operations during lowest since September last year.

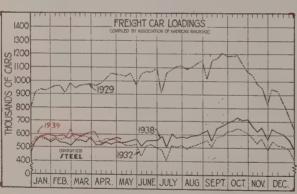
#### CAR AWARDS INCREASE SHARPLY

Domestic freight car awards during 3095 cars, compared with 15 placed in month last year. April awards were rethan any month so far this year but 23 the 3062 cars placed in the entire fithe first four months this year award compared with 829 in 1938, and 40,705 in

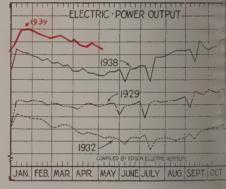
#### COMMODITY PRICES SLIGHTLY LOW

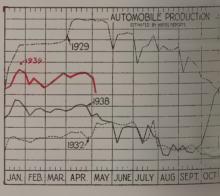
The all commodity wholesale price United States department of labor eased March to 76.7 from the 76.9 level held th ary and February. In March last year at 79.7. The Department of Labor's weeering the same group of commodities in the week ended April 22. However the was not sufficient to offset losses during weeks of April. In view of this, early April indicate a still further decline in coto slightly lower levels.



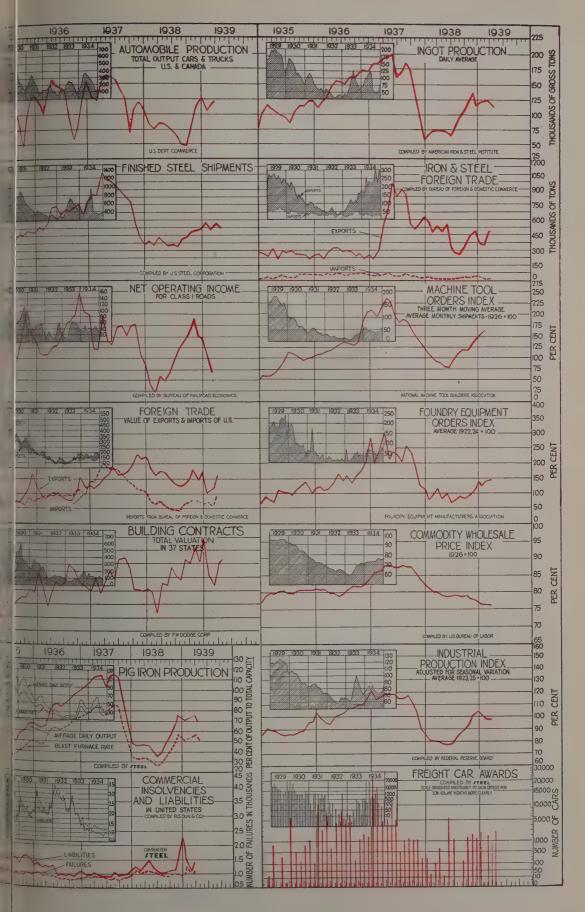


	C	Steely Dperatin Per (	works ng Rat Cent	e		Electric Out Million		
Week ending	1939	1938	1932	1929	1939	1938	1932	
Jan. 14 Jan. 21 Jan. 28	52.0 51.5 51.5	29.0 30.5 33.0	26.0 27.0 28.5	82.0 83.0 84.0	2,269 2,289 2,292	2,115 2,108 2,098	1,602 1,598 1,588	
Feb. 4 Feb. 11 Feb. 18 Feb. 25	53.0 54.0 55.0 55.0	31.0 30.0 31.0 30.5	28.5 27.0 25.0 25.0	85.0 86.0 88.0 83.0	2,287 2,268 2,249 2,226	2,082 2,052 2,059 2,031	1,588 1,578 1,545 1,512	
Mar. 4 Mar. 11 Mar. 18 Mar. 25	56.0 56.5 56.5 55.5	29.5 30.0 32.0 35.0	25.0 25.5 24.5 23.0	89.5 94.5 94.5 94.5	2,244 2,238 2,225 2,199	2,036 2,015 2,018 1,975	1,512 1,519 1,538 1,537 1,514	
Apr. 1	54.5 53.5 51.5 50.5 49.0	36.0 32.0 32.0 32.5 32.0	23.0 22.0 22.0 23.0 24.0	95.0 95.5 96.0 98.0 101.0	1,210 2,173 2,171 2,199 2,183	1,979 1,990 1,958 1,951 1,939	1,480 1,465 1,480 1,469 1,445	
May 6	49.0	31.0	24.0	97.0	2,164	1,939	1,429	





		Freig Load	dings			Weekly Out
1929	1939	1938	1932	1929	1939	1938
1,734	587	580	572	914	86,925	65,735
1,737	590	570	562	932	90,205	65,418
1,717	594	553	560	926	89,200	59,365
1,728	577	564	575	947	79,410	51,443
1,726	580	543	562	956	84,500	57,810
1,718	580	536	572	958	79,860	59,100
1,699	561	512	636	907	75,660	56,977
1,707	599	553	560	977	78,705	54,440
1,703	592	557	575	<b>946</b>	84,095	57,438
1,687	594	540	585	958	86,725	57,558
1,683	605	573	561	961	89,400	56,800
1,680	604	523	545	967	85,980	57,500
1,663	535	522	545	956	87,019	60,975
1,697	548	538	567	972	88,050	62,021
1,709	559	524	562	1,004	90,280	60 563
1,700	586	543	554	1,052	86,640	50,755
1,688	573	536	534	1,050	71,420	53,385





■ A FAMOUS politician once made the statement that in the event of a military crisis involving America, a million men would spring to arms overnight. It took the World war to prove that he was more familiar with the American spirit than he was with the manufacture of Springfield rifles.

When a million men finally were armed, it was with Enfields "borrowed" from the British. The experiences of 22 years ago should have taught an indelible industrial as well as military lesson, but apparently it did not.

What the arms factories were to the wartime United States in 1917, the tool shops are to United States of 1939 as it struggles to overcome unemployment. Nevertheless there are today a certain number of production men, and a very considerable number of men influential in the financing of manufacturing, who still fail fully to grasp the importance of complete, modern tooling.

As president and treasurer of the Taft-Pierce Manufacturing Co., Woonsocket, R. I., and president of the Special Tool, Die and Machine Shop institute, Frederick S. Blackall, Jr. is particularly well fitted to discuss in this Forum the contribution which can be made to the re-employment of labor through a wisely conceived program of tooling.

He makes the point that industrial preparedness, like military preparedness, requires long range planning and that the management which defers consideration of these important matters too long, will find itself faced with a grave shortage of skilled help and unnecessarily costly tool expense in the rush of tooling which is a corollary of every major business revival. Now, in a favorable market, is the time to act.

Mr. Blackall's company, founded over a half century ago, was the pioneer in the field of contract tool work and its business in this field today is nation-wide. As head of the trade association which represents the contract tool and machine shops of the country, Mr. Blackall has, of necessity, "rubbed shoulders" with representative tool makers from every section.

-The Editors

■ IN APPROACHING a solution of the problem of re-employment, it seems fitting, in view of the popular demand for better military preparedness, to consider the equally vital problem of industrial preparedness. There is no more im-

portant phase of this question than the design and manufacture of the jigs and fixtures, the punches and dies, the molds, the gages, and the other production and inspection tools which are heart and soul of the mass production process. Without these vital tools of there could be no mass process, no interchang parts. Tools, in truth, a foundation of our moder economy.

It is a curious thing trained engineers freque glibly of future production a way which seems to granted that the tools magic wand, will be coof the air when the refinally arrives. Too late in that weeks or months tooling effort are pre-requential production process.

#### Prepare For Recov

There is perhaps no structive manner in which can aid in the re-empl men, and at the same tin a favor, than by cons tooling problems forthwill a broad front. For mon. have been expecting rece have met repeated disapp but one day it will come does we shall be faced v evitable shortage of ski the mad rush for draf toolmakers, for gage m the long deliveries and which are always the co a hastily conceived prog often, alas, they cons major characteristics of preparations.

The wise farmer makes the sun shines. In the fle ing today, "the sun is shining." Tool shops throcountry are well equipped ing to embark on tooling at favorable cost figures. ply of this service exceemand; but the special too machine shop industry a been characterized by "1

hen the demand exceeds as it surely will, debe extended, costs will all of the inefficiencies rush will make their

stably, preparedness for ibraces thoughtful conforming from the tooling problem when foresightedness of means cash savings to well as re-employment is of skilled artisans, waiting for?

other phases of tooling potentially profitable to which offer helpful aid on of the unemployment ol room equipment and set-up and inspection nachine tool accessories value in widening the f existing machine tools. op which considers its imited but which lacks urchase additional macan double the useful-ts existing equipment rchase of a few well ings and accessories, indard or special nature. archasing policy along will give many a shop a arket and an increased e without heavy investrease in its modest macomplement. industry ought to get its

house in order. "Do your tooling now and put men to work"—this might well be a slogan for this phase of the re-employment problem. Skilled



Frederick S. Blackall, Jr.
President and Treasurer
Taft-Peirce Mfg. Co.
Woonsocket, R. I.

help is available now; it will be almost impossible to hire later. And let us not forget that if war comes, either here or in Europe, the shortage of trained workers will be critical.

Since adequate tooling is the keystone of production, it offers a

basically sound approach to the reemployment problem. Good tools spell greater efficiency and a better product, which in turn mean greater sales and more men at work. Plan and execute your tooling programs now, and while helping re-employment, help yourself.

#### "Hot" Lightning Demonstrated at Sharon

■ First public demonstration of man-made "hot" lightning was made by Westinghouse engineers at Sharon, Pa., May 8, simultaneous with inauguration of an artificial lightning test for all distribution transformers of the completely self-protected class.

The improved lightning generator was able to create artificial lightning complete with the relatively low current, long-lasting "tail" that gives lightning its destructive, burning effects. The engineers let loose bolts of "hot" lightning that set afire a haystack, fused a pile of sand, instantly ignited cloth, caused an electric power pole to burst into flame.

The "hot" lightning generator will be used by its creator, P. L. Bellaschi, research engineer in charge of the high-voltage laboratory, in experiments to improve electric power apparatus.





Large mitered and welded bronze fittings used in paper mill to connect copper tubing. Long sweep 14-inch elbow in background has copper seating flange with steel backing. Courtesy Chase Brass & Copper Co. Inc.

■ IF CURRENT predictions are correct, the copper and brass industry will spend \$150,000,000 on new plants and equipment in the next five years, supplementing \$50,000,000 spent in the past three. Part of this program, designed to place the industry in a more competitive position, already is under way.

Like every other important producer, the copper and brass industry over a period of years has improved its manufacturing facilities and merchandising methods as well as its products. As result of a determined merchandising program to sell industry on use of copper and

New alloys with improved characterist, a more uniform material from better promethods, coupled with a competent tesservice to customers, are factors in recognision of copper and brass industry, development work under way

its alloys and to dissipate the feeling that copper is a semiprecious metal, definite strides have been made in merchandising copper and copper alloys. Today they are invading a number of fields.

No longer is the industry confined to selling its products to the so-called cutup trades. Competent service engineers, backed by experi-

enced technical departments customers select the allowed to their product. The contrasts the situation at two ago when fewer a available—and the custo to the brass mill.

Recent heavy expendiplants and equipment, ar plated expenditures indicfacturing methods are being closely into line with p velopment and merchandiold theory that straight duction methods were not to the copper and brassibeing disproved as evic modern mills already pro-

Through improved at the industry has found it out better products, and much back-breaking labo employes at the same time conveyors, cranes, trucks matic loading and unloading in modern brass mill practically eliminates manual from casting metal to pashipment.

Most flat-rolled copper a is turned out on single-sta

Bars are lifted mechanically at through breakdown mill. Esco tem handles bar for additions Photo courtesy Revere Coppe Co., Rome, N. Y.



#### Copper

TY

inills have come into i recent years. Howside stand mill is not it still is preferred operations although have found tandem geous for breakdown his rolling.

t some of the industruing equipment, onercial use and baltevelopment, indicates and y made. A substantial to the sheet copper colled on four 4-high in tandem and served handling equipment. The broken down in two soperated in tandem, automatic handling walking-beam or rollinaces, coupled with the gequipment by contact hand loading and

#### chinery Advances

progress is being opment of machinery of tubing, rod, wire s. A new tube machine a 75 per cent reductive operation. Multiple opment is becoming especially for productive r sizes. Equipment is use which draws tubing of well over 1000

d usion process for conakes a skin pass from
d pushes out the core,
in possibility of surections in resulting
is removed as billet
ugh press, or it may
d table before extrud tube reducing mabeen developed for
alloys as the nickel
ang shop methods have



This machine strands wire into cable at the Ansonia, Conn., branch of the American Brass Co.

been improved greatly, both as to types of furnaces and molding practice. Wider adoption of watercooled molds is said to have resulted in lower costs and higher quality slabs, especially as regards surface conditions and grain structure. Some success has been attained commercially with continuous casting and further uses for the method are indicated.

Marked improvement also is taking place in annealing and finishing methods, in addition to rolling. Equipment has been developed which pickles, washes, scrubs and drys the material in a continuous operation, providing far better surface appearance than previous methods. Equipment contributing to improved surface appearance includes controlled atmosphere, bright-annealing furnaces for finished material.

Such improvements, of course, mean physical properties of copper and copper alloys may be more closely controlled and finished material thus fitted more precisely to user's application. Copper alone may be varied physically at will within limits of severe cold rolling at one extreme and soft annealing at the other.

In addition, other metals may be added to copper to make a series of several hundred ductile alloys, within definite limits of composition, all

stronger than copper and capable of being worked like it. Such copper alloys break down into six principal classifications. Most widely used is brass, ductile with zinc content between 40 and 44 per cent. True bronzes are ductile up to 10 per cent tin. Cupro nickels are ductile through the whole range from copper to nickel. Silicon alloys are ductile up to 4 per cent silicon, other elements being present. Aluminum bronzes are ductile with as much as 10 per cent aluminum. The high strength cadmium alloys, with relatively high conductilities, are considered ductile with additions of 1 to 4 per cent cadmium.

Other alloying elements, of course, may be added to impart certain characteristics. Lead, for instance, lends free-cutting qualities. Beryllium has forged sharply to the forefront and more thought is being given to other additions such as titanium, zirconium, selenium, manganese, chromium, phosphorus and antimony.

Brasses have been developed with nickel and aluminum additions which impart age-hardening characteristics. Conductivity of these alloys is low in soft condition but it is said that a low-temperature an-

neal following quenching results in a combination of higher tensile strength and electrical conductivity which will make them more valuable to the electrical industry. In time, metallurgists feel that nickelaluminum alloys will find their fields.

At present, beryllium copper is regarded as best of age-hardening alloys due to exceptional fatigue properties, conductivity is regarded fairly good as well. This alloy fabricates easily in soft temper, yet

through heat treatment produces tensile strengths up to 200,000 pounds per square inch. Also, it has been found that small nickel additions up to 1 per cent prevent objectionable coarsening of the structure without interfering with heat treatment or fabrication. However, beryllium copper with a good commercial grain is available without addition of a third element.

Increasing applications are seen for age-hardening alloys, including beryllium copper, copper nickel

aluminum, copper cobalt, copper chroi per iron phosphorus not expected to repla ing alloys. The alapproximately 2.5 pe 0.50 per cent phosp veloped recently strength, hardness a These offer possibi the same fields as co and copper-cadmium purposes as welding overhead conductor copper represents a for such purposes a trodes, but its possib been fully explored copper chromium no in place of copper brushes and commuta plane generators.

Lead has forged a loying element for parts, especially ducutting qualities it fact, a dozen lead-be loys now are offered nickel silver and picontain up to 1 per though 0.5 per cent limit. Selenium also as a free-cutting age

#### Cupro Nickels for S

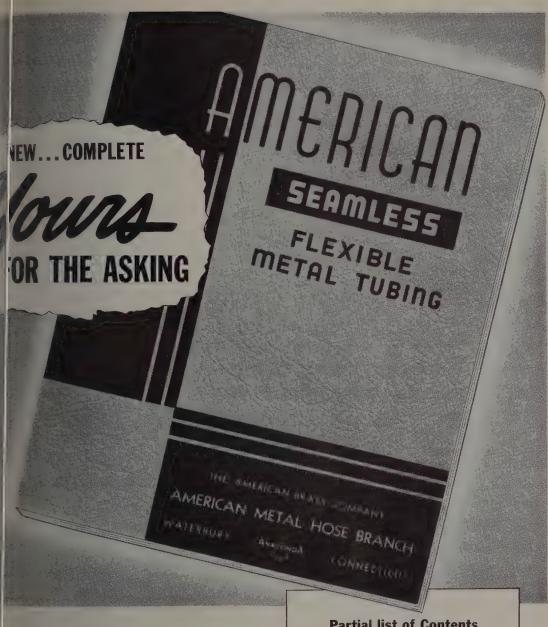
Several corrosions have been developed oil refining equipmendenser tubes in marinand other fields. The (20 to 30 per cent copper) are favored fice. Aluminum brassa British developmen progress. Admiralty cent copper, 29 per cent tin) generally is ly due to its utility:

Welding advances routlets for copper a especially copper-silic an example, the laumerly used riveted of for hot water tanks cently has widely accopper-silicon alloy, progress also has twelding copper abrasses. Copper and lined steel tanks are into use.

Gas brazing has by more extensive us but alloys are necess produce good welds practice, manganese by all brass are regarder (Please turn to

Copper alloy bus connectric power plant (top). C (center) for housing conper tubing (bottom) for braking system. Courter Brass Co.





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#### **Partial list of Contents**

Method of fabrication Conveying of steam—of liquids of gases; controlling vibration Design of machinery Specifications Engineering data Simple installation rules

MERICAN METAL HOSE BRANCH of THE AMERICAN BRASS COMPANY General Offices: Waterbury, Conn. . Subsidiary of Anaconda Copper Mining Company In Canada: Anaconda American Brass Ltd., New Toronto, Ont.



#### Welded Steel Cruise

Round-bilge flat stern pleasure cruisers feature standard lifeboat construction. Keel and ke son are bar steel and welded. Longitudinal hu joints are lap-seamed and riveted. Hull is spe welded to channel frames

■ WELDED and riveted construction is being employed by Frank Morrison & Son, Cleveland, in building 20 and 26-foot steel pleasure



Completed cruiser, showing its attractive finish. Riveting is entirely invisible

These boats, which are shown in the accompanying illustrations, observe government lifeboat specifications regarding plating and frames as closely as possible, but the lines follow latest small cruiser practice. Both boats are of the round bilge type with wide flaring bows and flat sterns, a type which drives easily and attains excellent speed with moderate power.

These hulls are built over per-

manent wooden molds. General specifications of the two boats are very similar, although it has been possible to use slightly lighter gage material in the smaller boat. In the 26-footer the keel is of  $5/16 \times 2\frac{1}{2}$ inch bar steel, standing, with a sister keelson of ¼ x 4-inch bar welded to it. Bottom plating is of 12-gage, about 24 inches wide, lap-seamed and fastened with a double row of rivets, staggered, using eighteen No. 9 countersunk head rivets per foot. Between the lap seams are felt strips, 1½ inches wide, soaked in white lead.

After the plating work is finished the hulls are removed from the molds for completion of riveting of the seams. The first step is the

(Left) Hull of steel cruiser showing combination of riveting and welding in its construction, said to overcome warping in the handling of thin gage plating. (Right) Interior of hull showing formed steel channel frames which are spotwelded to plating. In the center foreground is a box type frame which carries the engine bed

(Please turn to Pag

installation of white formed to the shape of and fastened into the it to shape. Two 3 x angles, each 12 feet lo spaced, are welded into allel to the keel. Thes. the engine bearers and white oak engine beds through fastened to the

Next the frames of 1 12-gage steel channels and installed, spaced centers. These are sp the hull plating and pr made for fastening of frames. The transom 12-gage plate reinforced cal angles and spotweld

In finishing the interi steel hulls a special sprayed on, after which ous enamel is applied wi This is baked at 500 de Outside seams are g thoroughly sanded. Th priming coats are applied by a coat of glazing mai sanding and finally thre





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Inexpensive limestone is employed in this system.
By unique control of precipitation, size of ferrolled and gypsum particles can be controlled at will to give fast settling, easily filteres solids. System is adaptable to hydrochloric and hydrofluoric acids also

By C. L. KNOWLES

The Dorr Co. New York

■ THIS PROBLEM is treated here from the disposal angle only, with little emphasis on by-product recovery as we believe steel manufacturers prefer to manufacture steel and not to produce and market other materials. Marketing in other fields has certain drawbacks. If by-products are to be recovered, they had best be those that the steel mills themselves can consume.

Ferrous sulphate as copperas unfortunately scarcely is worth its freight either on its iron or sulphur value. In general, the cost of treating pickle liquors should be added to the cost of manufacturing steel as an overhead charge.

The practice of pickling steel in sulphuric acid need not go on forever. Alternative methods of pickling now being studied may be perfected in the next five years. Fundamentally, steel men are interested in a minimum initial investment and lowest possible operating cost in line with low maintenance cost, dependable operation, high operating efficiency and conformity with state specifications for stream pollution. Such a plant has been developed and operated continuously on a semiworks basis. One commercial installation has been sold to go into operation this spring.

It is general opinion that limestone will not neutralize pickle liquor readily and completely. Such may be the case with coarse stone and inefficient agitation mal conditions. Lime ever, is far cheaper to its CaO value. Limes erally quoted in the Pitrict at 80 cents f.o.b. shor say \$1.80 within 50 m burgh. This correspond \$1.42 per ton of lime (source or \$3.20 delive) actually lime may cost

However, limestone is tive in the neutralization liquor, when properly in limestone must be fined cent 200 mesh. It should ground as experiments of

Diagram showing arran equipment in plant for waste pickle liquor by the as described he





activity for newly ground material. Half-inch limestone is several dollars cheaper at the source than pulverized material and purchasing the coarse product eliminates the difficulty in handling dusty carbonate.

Efficient agitation is important. Obviously if we carefully grind the limestone to expose a maximum of freshly ground surface, all this goes for naught unless intimate contact of these surfaces with the pickling liquor is provided. Both sulphuric acid and ferrous sulphate precipitate as calcium sulphate, and coarse particles of limestone become coated with sulphate, thus rendering the cores impotent.

Apparently the calcium carbonate, sulphuric acid, iron sulphate reaction will not go to completion as such but reverses when a definite quantity of ferrous hydroxide has been formed. Also, oxidation of soluble ferrous sulphate with air is not feasible because of the increase in acidity as the oxidation proceeds with liberation of sulphuric acid. Oxidation of ferrous hydroxide to ferric hydroxide by means of air is, however, possible, and if the ferrous precipitate is oxidized as formed, the neutralization goes to completion with limestone. Our semiworks plant neutralized and oxidized 99.7 per cent of the soluble iron salt in waste pickle liquor in less than an hour. Ferrous salts in the treated water show up as chemical oxygen demand, so this is important.

It would appear that processes depending on the cementing properties of ferrous to ferric hydroxide in the drying or calcining stage cannot, therefore, use limestone but must make use of the more expensive oxide or hydrate.

#### Precipitate Size Controlled

Normal gypsum precipitated from pickle liquor by neutralization with lime or limestone is finely divided and settles and filters slowly thus necessitating costly equipment for clarifying the liquors and dewatering the sludge. The presence of slimy ferrous hydroxide in the gypsum only increased this difficulty. By eliminating the ferrous hydroxide as described above and by making use of a unique control of the conditions of precipitation, the particle size of the ferric hydroxide and gypsum can be controlled almost at will and fast settling, easily filtered solids result.

We have attempted by using fine freshly ground limestone, efficient agitation, oxidation with precipitation, and control of particle size to provide a low initial cost, low operating cost and elimination of stream pollution difficulties.

Water discharged from the plant

has a pH of over 6, is neutral to methyl orange and carries in solution only a trace of calcium sulphate in no way harmful to human or fish life.

Either now or later, wash waters doubtless must be treated. This system treats them at practically no additional cost. Up to 10 parts of wash water per part of pickle liquor may be fed to the equipment with no additions. Since wash water normally have one tenth of the concentration of the undiluted liquors, these washes can be treated at but a slight additional chemical cost.

#### Layout For Small Plant

Accompanying sketch illustrates a typical small plant. Here %-inch limestone, of any CaO content, is delivered in gondola cars to a sump under the tracks. An elevator and belt transport the stone to a suitable hopper at left from which it is fed by means of a chain type feeder to a cylindrical mill operating in closed circuit with a classifier.

Grinding is carried out wet, either in water or wash liquors, and no material can leave the grinding circuit until ground to 200 mesh. Oversize is automatically returned to the mill for further grinding.

Pickle liquor and wash waters are collected in an equalizing tank and pumped with the wet ground limestone to three turbo mixers operating in series where a detention of one hour is provided. Air is delivered beneath the impellers of each of these mixers, conditions being maintained to completely neutralize the acidity and also to oxidize the ferrous salts completely. A coarse gypsum and ferric hydroxide precipitate results.

By means of mechanical flocculation, the slurry is further conditioned before clarifying in the Dorr thickener. The crystal clear liquor overflowing the thickener contains no injurious ingredients and is discharged to the stream. The continuously withdrawn gypsum at final density is filtered or centrifuged and is trucked away as a 50 per cent solid cake.

If desired the ferric hydroxide doubtless can be recovered by flotation and valuable products possibly can be recovered from the gypsum sludge. For the present, however, we look upon this process as the solution to a straight pollution problem and prefer not to complicate the situation by offering monetary returns of any sort.

It is difficult and unwise to try to generalize on costs of any installation. To give some idea, however, a unit such as described to handle 18,000 gallons of 1.5 per cent sulphuric acid, 10 per cent iron sulphate pickle liquor and ten fitty of wash water dainstalled for \$40,000 to rect operating costs burgh district might be. This is obviously a plant. A unit to take gallons daily from pickling operation wouthe above figure, but sulphuric acid content per cent and the iron tent 20 per cent, the is sumption would increas the daily direct cost m

It is believed that special containing hydrochloric acid and hydrofluoric handled in this plant to tion of the authoritie acids will be neutralize salts appearing in a overflow discharged to

#### "Get There" Me Selling One's Sel

■ The Knack of Selling
James T. Mangan, clott
5½ x 8 inches; publis
Dartnell Corp., Chicag
by STEEL, Cleveland, f
Europe by Penton Pu
Ltd., Caxton House, V
London, S. W. 1.

Don't be a duck and after laying an egg, but cackle about it, like a even if you haven't laid will bring you into notice

The author throws over the old rules based on the tem, the idea that reward those who have the ability ter, honesty and who regardless of other thing not decry these virtues, have you possess them as can. But whether you hand, advertise yourself, front and make a noise notice. Do your work as world you have done it.

It is a novel set of ruthor lays down for attain but every reader knows who has succeeded by the things Mr. Mangan taking precedence over greater ability, getting twards, perhaps on much

In addition to being in the book charts a course man and woman who ability and wants to ma ability at the highest prisents the practical "get tem of life as opposed to retical "copy book rules that usually leaves us started. It shows how, with tensive set of exercises, routines, practical hints, suggestions on simple thir

It is advertising applied one's self.

56

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Merchant Bar and

Billet Mills

Pipe & Tube Mills
Non-Ferrous Mills

#### PITTSBURGH ROLLS

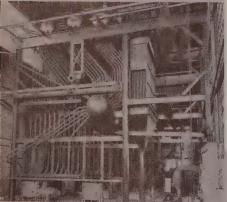
Division of Blaw-Knox Co.
PITTSBURGH, PA.

"Steel's Partner"

# WELDS COMMENTS PICE OF THE PARTY OF THE PART

NATIONAL SEAMLESS means pierced from solid billies of finest quality steel. In Seamless you are sure of getting flawless steel, since the piercing process is the severest test of quality ever devised. Tests end inspections at every stage of production give you double assurance that each length of NATIONAL Seamless will display the same uniform wall strength, dimensional accuracy, and physical uniformity.

POWER PIPING calls for the strongest, safest pipe available. Here are expansion bends of NATIONAL Seamless in the main steam system of a large midwestern industrial plant. In addition to its physical strength, this pipe has a smooth, clean surface, ideal for insulating coatings.



BOILER TUBES are the life lines of modern power. That's why NATIONAL Seamless Tubes are standard equipment in stationary, locomotive, and marine boilers. Here are NATIONAL Seamless Tubes being installed in the steam-generating unit of a large eastern industrial power plant.

POWER

RAILROADS · REFINING

MARINE · REFRIGERATION

AERONAUTICS · AUTOMOTIVE

MACHINERY · OIL · WATER

GAS · ETC.

#### NATIONAL SEAMLE

protects important telephone c new-type river crossing; answers problems in other fields

uarding AMER

T would be hard to find a job on which more depleted Passaic River cable crossing. For these cables controlled the portant telephone circuits connecting New York with west. They transmit 160,000 conversations daily, in addittelephoto, and radio transmission. A cable failure, it is said over 1,000,000 radios, would cause untold repercussions tworld's financial structure.

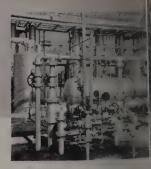
To assure these cables the greatest possible protection cased in National Seamless Pipe. 36 pipe-line "tunnels," long, are buried ten feet under the river bottom. These fur adequate capacity for existing cables, but room for experimental than the water-tight pipes run ordinary land cables at saving over the heavy armored cables usually employed fing. And it is a relatively simple matter to withdraw a copie and insert another, whenever desired.

This is another example of how industry's toughest p to the intelligent application of National Seamless. When pipe or tubes for difficult jobs, there is no product on w more safely depend than Seamless. National Seamless! Without Welds." It stands for uniformly high wall strength accuracy, and consistent workability. It is metallurgy's cloto the perfect tube!

Give NATIONAL Seamless your toughest assignments, and the true meaning of dependable service. It is available in from 3/16-in. mechanical tubing to 24-in. O.D. pipe.

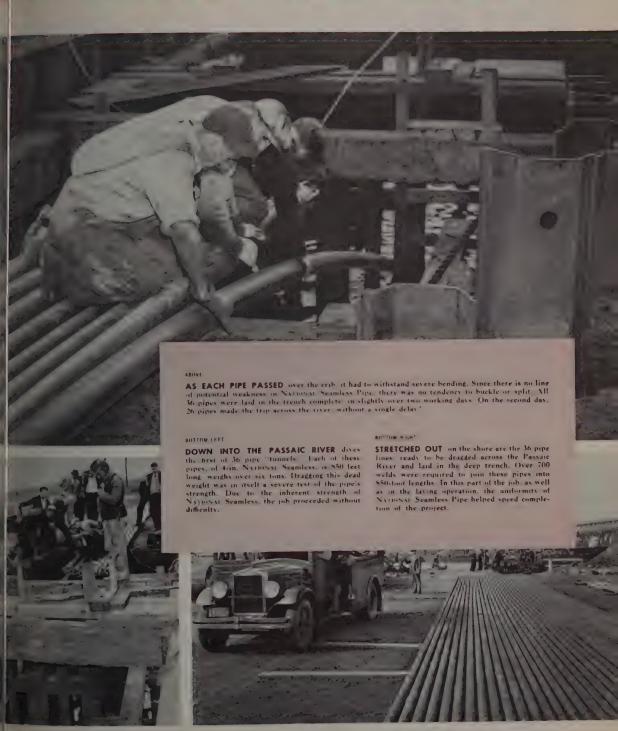


MODERN TRAINS require stronger, finer pipe to withstand the added stresses and vibration of hauling freater loads at higher speeds. Best insurance against operating troubles is NATIONAL Seamless in steam, water, and air lines, and boiler tubes.



REFINERY PIPING leads a tough life. withstand tremendous pressures, extre peratures, corrosive materials. In many refineries, you'll find that still tubes, or tubes, heat exchanger tubes, het oil lingeneral refinery piping are NATIONAL S

# ST VITAL LIFE LINES



#### NATIONAL TUBE COMPANY

PITTSBURGH, PA.

Columbia Steel Company, San Francisco, Pacific Coast Distributors . United States Steel Products Company, New York, Export Distributors

TED STATES STEEL



#### Intraplant Railroad

Narrow-gage railroad with battery-power locomotives efficiently handles work in process plant machinery and slag in 90-acre plant where large volume of nickel and nickel al material is rolled. Detailed records of mo ments aid control of rolling stock

#### By G. E. STRINGFELLOW

Vice President Thomas A. Edison Inc. West Orange, N. J.

M AN INDUSTRIAL railroad consisting of three locomotives, 50 roller-bearing cars and more than two miles of track forms the interdepartmental transportation system in International Nickel Co.'s 90-acre plant in Huntington, W. Va., where rolled nickel, inconel and monel are produced in the form of strip, sheet, rod, wire and other merchant shapes to supply the continually increasing demand of fabricators.

From incoming nickel-copper matte and electrolytic cathodes of pure nickel, ingots are poured, then hammered down to blooms ready for the reduction rolls for conversion into billets and finished products.

Before ingots are released to the

blooming mill, they go to a chipping shop where surface imperfections, which would only be magnified by further reductions, are either milled or chipped off. Blooms and billets are treated likewise. If surface imperfections appear at any point later, the metal again is taken to the chipping shop for their removal.

Thus, in the transportation besuccessive manufacturing steps, this safeguard over the quality of the finished product interposes additional hauls as compared to those ordinarily required in the corresponding processes in the steel industry

All of the major departmentswhich include calciner, refinery, chipping shop, carpenter shop and warehouse-are housed in their own buildings where overhead traveling cranes serve for handling of materials.

All movement of material from one department to another is accomplished by the industrial rail-

road, with the cranes and unload the cars. rial in process, the r other freight such chinery parts, taken the machine shop, ar is taken from the re dump yard.

The plant occupion amounting to approacres. The buildings about a landscaped along which the mai railroad runs and fro branch lines switch off

#### Records Reduce I

Visible from the centhe entrances to the m buildings above which of a red light (supp telephone) serves as a dispatcher that a load ready and a locomotive

Accompanying each ( is a transfer notice whi purpose of a bill of notifies the locomoti exactly as to the desticar. This eliminates the of needless movement. buildings range in leng feet and contain as n tracks running their en Thus the locomotive opto know the exact part ing at which the depart man wants the materia unnecessary backtrackin ing is to be avoided.

Sending departments to telephone receiving d get this information an the material-transfer motive operators in the structed to move no cars notices accompany them

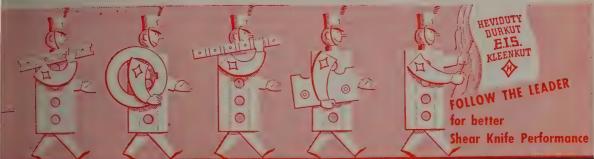
As a means of control, maintained daily, showi



Individual cars are from long. Trains ordinarily range to five cars

### CONOMICAL SHEAR KNIVES

for high speed precision service





eight shearing units in the South's mill, the flying shears which cut the equipped with Heppenstall knives. but two of the applications in this great here Heppenstall knives are serving.

There's fifty years of "knowing how" behind every Heppenstall shear knife. You'll find them giving extra service in mills everywhere. Some of the many types available are illustrated above. If you have a tough shearing problem, why not see what Heppenstall knives can do?

**HEPPENSTALL PRODUCTS:** Die Blocks ... Shear Knives ... Hammer Rams ... Piston Rods ... Tinning and Galvanizing Rolls ... Gellert Tongs ... Locomotive Axles, Pins and Rods ... E.I.S. and O.H. Alloy Steels ... Carbon and Alloy Forgings

EPPENSTALL COMPANY PITTER BRITISHED PARTIES PA







runs made by each portion of one of thes shown below: Cumulative Distance

(feet) Dep
0 Electrical
800 Billet, Y
1700 Sheet Mil
2300 Acid Rec
Track
3000 Calcine
3800 Cold Dra

Track
The complete record
shows a total amount
terdepartmental record
tance covered of 50 h

average of around 550 As another means service recorders are all times on all the lo

Both records substiguesswork and assist the work done, detectities for improved offtermining when chartions in equipment or required.

The track consists rail, 30-inch gage. I length from 8 feet for etc., up to 25 feet for other special lengths uniform carrying stons. Trains range from the locomotives 5 tons.

Power for the locorplied by batteries. I changed as required, tric hoist, so one or tives will be continue for service.

On the cab of each, cross member at the the battery compartment battery hold-down. The ranged to lift the opthe battery first so the holdback at the from partment. Then it is not and out from under at the rear.

To save time in fluteries, the company's partment has designefiller nozzle with alecin the end to actuate a

(Please turn to

Top, the railroad has a through all major man partments permitting the spot empties and to pi any point. Center, an nozzle long enough to all cells from one side and giving a rapid flow designed by the electric of this plant. Bottom, and duty 24 hours a day for a ing cars. It easily pick a wide variety of sizes material

#### nnts In Ald Brass

metal from Page 50)

ylene welding. Copbys also are well
welding. Most copy be silver soldered
relding, due to high
involved, is confined
high-copper alloys,
per-silicon type. In
iding, low electrical
regarded essential,
alloys again are in
Ordinary brasses,
be resistance welded
are not leaded. Sucdg of leaded alloys is
e oxyacetylene meth-

ges not readily peraking place in fields
the per and brass industrance, instead of the
dustry representing a
material recent years, the
trance in recent years, the
dustry representing a
material recent years
dustry rep

ation and airconditionhas industry finds a rapidmarket mostly in form neter tubing and sheet. gerator makers have opper alloy for refrigprators. Great strides ng lade in airconditioning, may producing 1500 room welly to sell at low cost. been reduced on larger o the point where the ine owner represents a politial market. Unforhilding code restrictions ack airconditioning, but willy are being removed.

#### " r Curbs Bacteria

ir washers are desirable itioning since bacteria lture readily in contact and its alloys. Copper choice for heat transits, a trend supported by it of a more efficient fin tube.

building field, 10-ounce et is progressing in comith other types of roof-nposition material with a result brass companies fountered much success for flashing. Brass companies trim, such as a combinaruded sections and rolled store fronts. Bronze win-

dow sash and frames also are being used to some extent in mediumprice houses. Copper lines from ½ to 2 inches in diameter are being used to conduct gas in some sections of the country such as the Southwest.

Copper radiation for home and commercial heating has made some headway but a more decided trend is toward use of copper tubing to conduct steam or hot water in heating systems. Hot water circulated by a pump is one of the newer developments in home heating. Less radiation and smaller conductors are required, with good prospects for use of copper tubing.

Copper alloys were not used much in sewage disposal up to 12 years ago, but this outlet was opened up with development of materials with welding properties, principally copper-silicon alloys. Applications are mostly for sluice gates, filters, screens, anchors, bolts, etc. This offers extensive possibilities since treatment of raw sewage, especially by large cities, is assuming more importance. Flood control and irrigation work also offers a large outlet for these corrosion-resistant alloys for mechanical equipment such as gates, gate seals and paradox valves.

#### Seamless Pipe Available

Large-size seamless tube up to 26 inches diameter now is available to chemical industries, including rayon plants, paper mills and textile companies. Seamless pipe is produced economically up to 10 or 12 inches diameter. Larger sizes are welded. At least one company is offering a complete line of welding fittings to facilitate installation of all-copper piping systems.

It is reported that approximately 300 railroad cars are now in service equipped with copper air-brake piping, resulting in a 40 per cent saving in weight of this equipment. Cars on the Broadway Limited and Twentieth Century Limited are so equipped. Had all air-brake lines installed last year been of copper tubing, it is said 19,000,000 feet would have been required.

Railroad field is regarded by the copper and brass industry as one of its best outlets. Advent of high-speed air-conditioned equipment has improved the prospects. Incidentally, a significant development has been application of cast or wrought bronze filler rods for building up worn locomotive hub liners by welding. Railroad communication, signal and power transmission systems consume great quantities of copper and its alloys in form of wire, cable and accessories.

Outside the large consuming industries, wider applications and improved fabrication methods are being developed for the more prosaic copper alloys such as yellow brass. For example, a clock manufacturer has designed his product so a dozen parts may be stamped from a single blank without wasting a fraction of an ounce of metal. Thus a material costing nearly 18 cents a pound competes with less expensive materials.

#### Welded Steel Cruiser

(Concluded from Page 52)

high grade white enamel, completely obliterating all signs of rivet heads and fastenings.

Driven by a 90-horsepower gasoline marine engine, the 26-footer, which is finished as a sport cruiser, showed comfortable riding qualities in rough water at a speed of close to 18 miles per hour and almost no vibration. The hull withstood such tests as supporting the entire weight on one beam and suspending the hull between bow and stern blocks.

#### A.S.T.M. Proceedings In Two Large Volumes

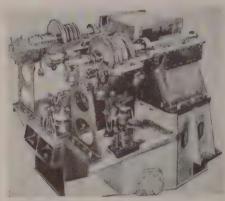
■ A.S.T.M. Proceedings, 1938, Part I, 1402 pages, Part II, 675 pages; published by American Society for Testing Materials, Philadelphia; supplied by STEEL, Cleveland, paper, \$5.50 each, cloth, \$6, half leather, \$7; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London S.W. 1.

Part I contains reports of 50 committees, outlining standardization and research work, 162 specifications and tests, prepared for the first time in 1938 or revised. Ten reports are on ferrous metals, including steel, wrought iron, pipe and tubing, cast iron, corrosion of iron and steel, magnetic properties, ferroalloys, iron-chromium-nickel and related alloys, fatigue of metals and effect of temperature on properties of metals.

Eight reports are on nonferrous metals, including copper and copper alloy wires for electrical conductors, nonferrous metals and alloys, corrosion, electrical heating, electric resistance and electric furnace alloys, copper and copper alloys, cast, wrought and die-cast metals and alloys and light metals and alloys.

Part II contains 45 technical papers and the Edgar Marburg lecture on the torsion test. Discussion of the various papers is included. Ten papers form the symposium on impact testing, thirteen relate to ferrous and nonferrous metals, eight to cement, ceramics and masonry materials and the remainder to miscellaneous materials.

# U.S.A's FIRST TURBINE "Call in So



The Turbine for
Union Pacific's
New Steam-Electric
Locomotive

THE TURBINE ABOVE powers one unit of Union Pacific's new 5000-h.p. locomotive.

This turbine develops 2500-h.p. Turns up 12,000 r.p.m. Uses steam at 1500 lbs. pressure.

**Problem:** The oil must be light enough to lubricate the turbine...yet heavy enough to protect precision reduction gears.

No existing oil could do that job!

Because of their long, successful experience in turbine lubrication, Socony-Vacuum engineers were called in. Working with the turbine builder's staff they developed a new oil...tested it severely.

It was the right oil.

This was typical. The makers of Gargoyle Lubricants were *first* to supply correct oils for the steam engine, the steam turbine, the Diesel and textile's high-speed spindles.

Whenever Industry moves ahead, Socony-Vacuum keeps step with "Correct Lubrication."

"Call in Socony-Vacuum"—today—and take advantage of 73 years' lubricating experience.



# VE PROVED IT PAYS TO\_ -Vacuum!"



## SOCONY-VACUUM

Industrial Service and Lubricants Help to Lower Costs by



#### SOCONY-VACUUM OIL CO., INC.

Stranger & On of here your Division - White Ster Division
Laborer Division - Magnolia Petroleum Company
Chicago Division - White Eagle Division - Wadhams Division
Deporal Petroleum Corneration of California



#### Fast Malleablizing

New furnace equipment permits short mal ablizing cycles, produces clean work by mea of protective atmospheres, thus greatly increasing output yet retaining all excellent qualities of longer treating cycles. Automatic charging and discharging chambers are described

By W. F. ROSS

Furnace Engineer
The Electric Furnace Co.
Salem, Ohio

■ INITIATED by producers of malleable castings for the automotive and machine production industry.

the trend toward furnace equipment designed to decrease annealing time has steadily asserted itself. Many malleablizing cycles over 55 hours are being shortened. Today even the smaller producers are contemplating the possibility of shortcycle annealing.

Due to the methods employed in the past, there is a great field for

increased economy in by reducing the time the entire heat-trea Even up to 10 years packed in scale or orecovered, were placed kilns and heated to 1650 degrees Fahr. r 30 to 40 hours. This by soaking for 50 to which cooling to about Fahr. was allowed in quiring from 80 to 90 by opening the kiln fast cooling, the tem dropped to from 500 t Fahr. prior to remove packing. Total cycle from 175 to 225 hour to 10 hours total hand

Castings produced we satisfactory with good qualities, elongation fiper cent and tensile str 50,000 pounds per sq higher. The problem these characteristics we the beneficial advantage tively short malleability.

Speed of graphitize heating and soaking a rectly proportional to ture employed. Thus, to be shortened materially phase by employing his tures. However, exc growth or overanneal prevented by dropping ture rapidly to about Fahr., a condition imp fect in the kiln or bath

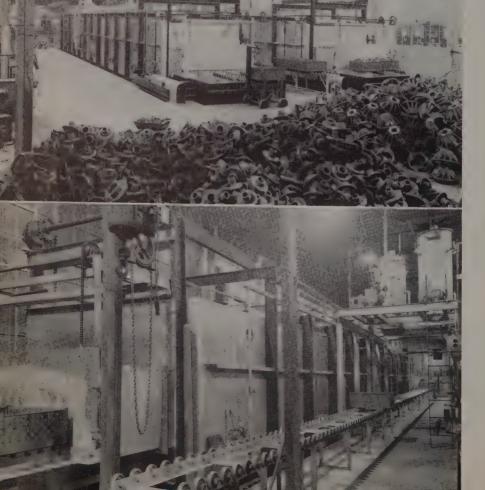
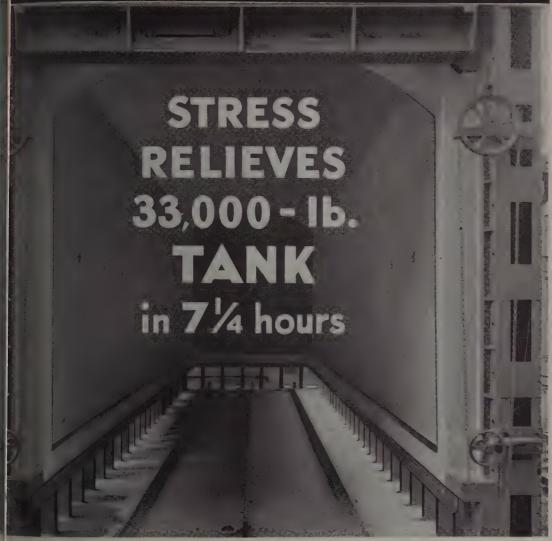


Fig. 1. (Upper)—Chargin identical, 340 kilowatt roller rail conveyor, furn (Lower)—Discharge end turn conveyor for transiconveyors to charging atmosphere generators se between the two units space required to a

USES B & W INSULATING FIREBRICK



Car-bottom stress-relieving and annealing furnace at American Car and Foundry Company, Milton, Pa. plant. Constructed of B&W Insulating Firebrick; designed and built by Morris Engineering Company of Philadelphia.

#### Significant Facts

nensions (inside): 471/2 ft. by 13 ft.; 17 ft.

nd end wall: 13 in. B&W Insulating Firebrick.
oor: 9 in. B&W Insulating Firebrick.
in. B&W Insulating Concrete, covered by
in. B&W Insulating Firebrick and paved with in. dense firebrick.

: Chlorine Tank, 33,000 lb., annealed at

ling time," including heating up and cooling:

#### Superior Performance, with B & W Insulating Firebrick

B&W Insulating Firebrick were selected for this and other up-to-date stress-relieving furnaces because of their high insulating value and low heat-storage capacity-resulting in a short cycle and low fuel consumption. Other features include resistance to spalling and high load-bearing properties.

Technical data will be gladly sent upon request

\*\* Sch & Wilcox Company . . . Refractories Division . . . 19 Rector Street, New York, N. Y.

BCOCK & WILCOX

ing equipment. Since this is to be followed by slow cooling to about 1300 degrees before withdrawing the material from the heat, the various steps involved would indicate a continuous type of furnace highly desirable.

Elements for a successful continuous malleablizing furnace include continuous conveyor type equipment suitably divided into separately controlled heating, fast-cooling and slow-cooling zones. The unit may

be designed with provision for controlled atmosphere to eliminate scaling of castings, thus materially reducing weight of supports, containers and packing required.

Application of special atmosphere is important as annealing work packed in pots is apt to be somewhat costly. Employing nonoxidizing atmosphere to surround the work while subjected to all temperatures within the oxidizing range eliminates all tare weight except

that of relatively trays, and on some vecan be eliminated.

Atmosphere-control of course, must be se by use of welded juctosing shell and upand discharge openichamber, vestibule on

The least expensive for use in such work in produced by combustinatural or manufact with air at a careful carbon dioxide to each in the products of certain the carbon dioxide to each in the products of certain for the such as the carbon dioxide to each in the products of certain the products o

Cycles requiring: hours perhaps are bit of modern continuor Other cycles ranging hours are used eximalleable castings or ysis, but sequence of steps in all these cyclially the same. Spectontinuous malleablic have employed conterpoller hearth conveither of which is adding by means of electroller radiant tube

#### Material In

Such an installat Canadian producer cellent picture of r ment. Here two furnduce 833 net pounds; equipment includes pusher operated, rolle extending the length and cooling chamber nace handles two row loaded in box-like t resisting alloy.

By simultaneously 211-pound trays per tray loaded with 449 castings, the above plished with a total approximately 36 had nace. The load is que 1500 degrees Fahr, as soak at that temperati hours. This is follow

Fig. 3. (Top)—Chargin kilowatt, roller hearth, co abilizing furnace. Mate into furnace loading matically by overrunnin veyor rollers. Signal when trays of finished m removed from automati discharge delivery plat (Center)—Atmosphere rometer and controls for nace. Fig. 5. (Bottom)end, arrangement for du finished material is clea Note gasoline engine au furnace roll



1400 degrees Fahr. and to 1300 degrees Fahr., emperature the work is Time interval between bout 63 minutes.

ng, two loaded trays are n extension adjacent to g vestibule door and are the vestibule when the pens the door. Outer discharge vestibule is 2 finished trays withunloading platform ex-

proper time, the inner charging vestibule opens raulic pusher moves the trays into the heating When the forward push the pusher retracts, the or closes and the operas next charge.

#### oling Controlled

trnace, the work moves through the long heater and the fast-cooling ere heat is rapidly withthe work by air ducts er and under the work. v-cooling section, the reng rate is maintained by temperature control in with heating elements o retard cooling if ex-

finished material are d returned to charging gravity conveyor with handling.

recent installation of malleablizing equipment by a producer of castings tomotive trade. Here a t, roller-hearth type connace is used. It differs cribed in that the matethrough the furnace cona uniform rate of speed. of material not dependent ent upon preceeding or trays, a much lighter ruction may be utilized rious reduction in tare.

has gas-tight seals at where it passes through walls and shell, so the is suitable for controlled

ire cycle, 12 hours 36 arts with a heating period ch the material is quickly to 1750 degrees Fahr. allowed to soak approxihours, cooled quickly to s Fahr., followed by slow 1100 degrees Fahr., at perature it is discharged. rt cycle affords a much duction due to the acate at which the material hugh the furnace and bere elimination of excess the conveying trays.

and soaking chamber is

roximately 49 feet long and conasya 860 kilowatts of electric heattalm elements. This is followed by a ingl -cooling section equipped with rapsid cooled ducts. Successive coolwater ambers with electric heating ing d its retard the rate of cooling, elen iei 1 end cooling chamber for and a oling completes the furnace. final co t lock chambers at both ends Gas-ti gl. charging and discharging permi vi h minimum loss of special trays \ he re. atmosp

fe r buggies and associated Trans permit dumping loaded equipme in icharge end and returning trays at a larging end. Special atthem to nployed is made by parmosphere grion of gas mixed with tial combu wunts of air to give the metered an pe cooler before being analysis de a surface ty ito the furnace chamintroduced i. to reduce the moisture bers in order content.

Conveying t tant, cast, nic about 27 inches ¿ 100 pounds per each with 350 po rial, are loaded a: taneously at about vals. This results in of work being han

rays are heat resiskel-chromium alloy, quare and weighing tray. Two trays, unds net of mateid charged simul-17 minute inter-2500 net pounds dled per hour.

Under actual test conditions, production has ranged as high as 2900 net pounds per hour.

Charging is done in the conventional manner through a lock chamber. At the discharge end, the two trays nearest the door come into position upon a portion of the roller hearth arranged for accelerated drive and actuated by a limit switch which automatically opens the discharge door and rapidly moves the two finished trays of material into the discharge lock chamber, after which the discharge door closes automatically. A signal light tells the operator that there now is sufficient space within the furnace for two more trays.

At the same time, electrical interlocks are operated automatically to open the charging door and move the 2 trays of fresh material rapidly into the main furnace chamber after which the accelerated roll drive is cut out and the charging door closes automatically.

The operator then manually moves the two trays of material from the discharge lock chamber, using transfer buggies and a conveyor which returns the trays to

(Please turn to Page 78)

#### un Teeth Flame Hardened Cast Ir



■ Here a cast iron sprocket for a chain drive is bei manual control. Straddle type hardening torch is di using a hand lever with a 4 to 1 ratio to permit steady without jerky motion. Carriage supporting torch was est setup gave excellent results, more than doubling the ba tooth surfaces. Photo courtesy The Linde Air Produ T flame hardened using wn across tooth faces advancement of torch ly made. This simple nell hardness of the ats Co., New York



98" Upcut Shear for Strip



Drum type Flying Shear line

ASSOCIATED COMPANIES: DAYY AND UNITED ENGINEERING COMPANY, LTD., SHEFFIELD, ENGLAND DOMINION ENGINEERING WORKS, LTD.



Tin plate Flying Shear line with standard reciprocating crank type Flying Shear and Classifier

UNITED

ENGINEERING and FOUNDRY COMPANY PITTSBURGH - PENNSYLVANIA

and Upcut Shear for Blooms and Slabs

COMPANIES: DÂYY AND UNITED ENGINEERING COMPANY, LTD., SHEFFIELD, ENGLAND

DOMINION ENGINEERING WORKS, LTD., MONTREAL, P. Q.



### Quieter Rotating Mack

Unique system balances all types of rot parts for any speed, greatly reducing vibrand noise. New balancer indicates amount position of unbalance automatically and great rapidity for low cost, high product on

#### By F. C. RUSHING

Westinghouse Research Laboratories East Pittsburgh, Pa.

■ ELIMINATION of appreciable vibration, and reduction of noise to nearly the threshold of audibility is demanded in an ever-increasing number of fields of manufacture and so necessitate a closer approach to perfection in the balancing of rotating parts. The specific requirement

is for a high degree of accuracy in the dynamic balance of each rotor (rotating element) at its operating speed.

This definite objective has heretofore been comparatively difficult
in the quantity production of such
products as household motor-driven
devices, office machines, shop equipment, automobiles, etc., where high
speed rotors are widely found. In
high speed rotors, both the requisite
precision in determining the amount
and position of unbalance, and the
requisite accuracy in correcting it
to minimize noise and vibration can

best be attained by operating speed.

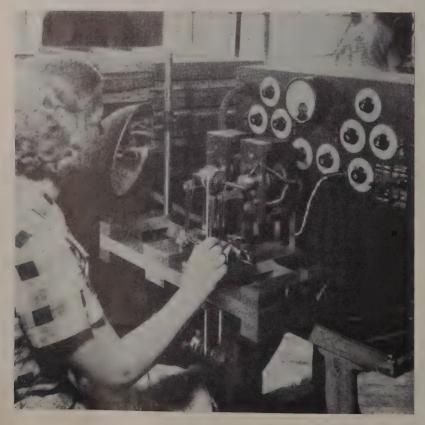
The reason is easily as follows: First, assurigid rotor. Its norm speed may be either fais known that the toto of such a rotor can be effective unbalance coing in two arbitrarily operpendicular to its ax Hence by adding or reamounts of material planes, the rotor can both statically and that is, for any speed.

#### Distortions Asymi

Now consider a no The 2-plane analysis at here, but each solution to one speed of rotation and positions of mass a decrements in the corr depend on the speed. S is ideally rigid; since forces are proportional of angular velocity asymmetrical distortion at high speeds in all even at low speeds in and single-bearing roto at which a high speed balanced dynamically differ appreciably from ing speed.

Another element of is that inspection time as manufacturing cost ods of determining at unbalance are prohibitive. Also the variabilit required to do a go source of irritation t

Balancing equipment being used on small e rotors automatically amount and position Belt driving rotor has for fast removal and rotors in the equ





gineers know what they want to accomplish.

neers know what can be done with mechanical

they are specialists in the adaptation of this
material to a remarkable range of uses. Let
udy your blue-prints and specifications. They
able to show you new economies of machining
of wear, metal stock, and power consumption, in
out the parts that you require. You will be under



# Pittsburgh Seamless

IS NOTHING EQUAL

IGH STEEL COMPANY · 1653 GRANT BLDG. · PITTSBURGH, PA.

HOUSTON LOS ANGELES

Stocks carried by Distributors in Principal Cities

CLEVELAND TULS

TO SEAMLESS

STEEL MECHANICAL TUBING

agement and skilled labor. Another frequent requirement is for determining and correcting the unbalance of a rotor in its own bearings—at operating speed and with minimal expenditure of time.

The problem imposed on manufacturers by a strong public preference for silent and vibrationless machines thus is expressed in specific engineering requirements: Rapidity, extreme accuracy of determination and correction, suitability for balancing any rotor at its operating speed, practicability of balancing large rotors in their own bearings at operating speed, and physical embodiment in a simple apparatus to be operated by factory labor in the case of quantity production rotors and by junior engineers in the case of large turbo-generators, etc.

The last requirement also could be expressed in terms of the instrument readings, amount of unbalance in each of two correction planes indicated on a dial calibrated in grams or ounces, and positions of the two requisite mass increments or decrements likewise shown to the operator by automatic pointers or their equivalent. All five of the above requirements are met by the new method described here, developed at Westinghouse Research Laboratories.

Successful applications of the new method have been made for small rotors from 1¼ to 3 inches diam-

eter; for medium sized rotors up to 100 pounds in weight; and for extremely large turbo-generator rotors. Speeds of balancing range from 1200 to 1800 revoltions per minute with one exception in which the balancing speeds are from 6000 to 8000 revolutions per minute. High speed rotors are mounted in bearings similar to their own; extremely large rotors are balanced in their own bearings. The new method was used with good results in balancing the largest turbo-generator rotor ever constructed, weight 250,000 pounds.

#### **Trial Method Now Primitive**

Of the methods in use for determining unbalance corrections, the most primitive consists in flexibly mounting the rotor and adding or subtracting weight by trial until the mounting or rotor ceases to vibrate during rotation. This method is seldom applicable in quantity production.

Various types of balancing machines have been built for determining, without calculation but correctly, the amount and position of unbalance effect in each of the two correction planes. In general such machines consist of a flexibly restrained carriage, effectively pivoted about an axis in one of the correction planes in which the rotor to be balanced may be rotated; combined with either an arrangement for

measuring amount a the carriage motion of troducing a known ur on the carriage adjuphase and in amount.

The pivoted carrias all balancing machinto separate the un ponents in the two coby having the carria one of the balancing force caused by an this plane is directed pivot and therefore the rotary motion of about the pivot. The d ture of the new meth pivoted carriage is re rotor may be mount. any way so long as a components at both planes produce vibrati tor or mounting. This p to be balanced in their and allows freedom in sign not obtained with carriage.

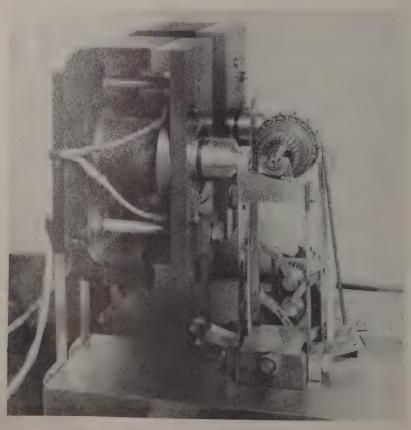
#### Carriage Distortion

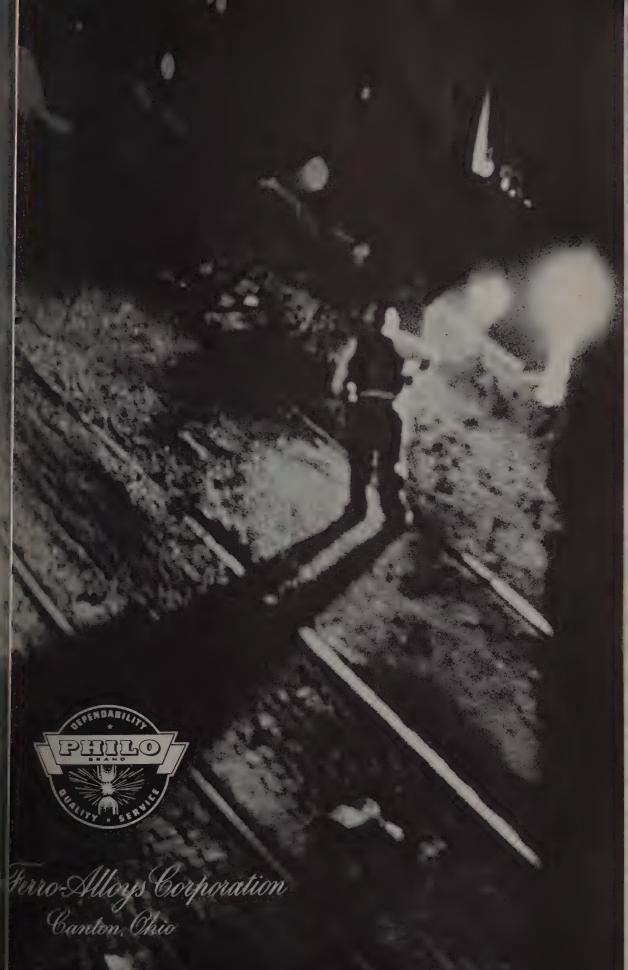
Also balancing of h. tors at operating spec in a pivoted carriage b tion in the carriage place the point of ac from that intended, and large forces caused by rotation of an unbalar a pivoted carriage rest vibration problems. method, no such carri is involved, and the msign may be made t most suitable for rotati balanced rotor at the speed.

Although the new me veloped primarily with balancing problems fo pivoted carriage is not possesses features wh desirable even for within the scope of carriage methods. At characteristics are: Ext city of mechanical desi ous types; inherently h ity obtained by not re unbalance to vibrate th carriage; readings of for both correction pla making mechanical ch insensitiveness to all bu tions.

In the new method carriage is replaced by mounting and an elect or network. The functionarrangement depends tion, which exists for mounting, between the

Vibration at the pivote moves coils in the field of permanent magnet, transvibrations into electric. Note method of pi





rection in one plane and the vibration of any two given points of the rotor axis. The vibrations at two points on the axis are converted into two corresponding voltages by magnetic pick-ups, similar to those employed for turbine blade and rotor vibration studies. These voltages are placed on the network in which the same relation obtains between them and a third voltage (produced by them in the network) as obtains between the vibration at the two given points of the rotor axis and the unbalance correction in one balancing plane.

Thus this third voltage corresponds in both phase and amount to the unbalance effect at one correction plane and similarly, the third voltage of a second network corresponds to the unbalance effect at the other correction plane, the input voltages to this second network being the same as those of the first, namely the pick-up voltages.

#### Voltage Measures Unbalance

The unbalance in one correction plane having been converted into a voltage proportional to the unbalance and in fixed phase relation with it, the problem becomes simply that of measuring the value of this voltage and its phase with respect to the rotation of the rotor.

For quantity balancing of rotors, this voltage is measured with an ordinary alternating current voltmeter calibrated in ounces of unbalance. The phase of the voltage, which corresponds to the position of unbalance correction, is indicated by having it time the flashing of a stroboscopic light, causing it to illuminate the rotor in that angular position in which the unbalance is opposite a stationary pointer. The angular position of the unbalance is recognized by means of numbers or other identification marks printed on the rotor.

#### Rotors Balanced In Field

For balancing rotors in their own pedestals in the field these voltage measurements are made by the use of a conventional alternating current potentiometer, or by the use of a commutator with angularly adjustable brushes on the rotor shaft in combination with a direct current voltmeter. These methods of measurement take a little more time but do not require the use of thermionic tubes.

On page 74 is a close view of a rotor mounting and of the two magnetic pick-ups associated therewith which clearly brings out important features of design and construction. Each bearing pedestal and each pick-up is supported by a pair of parallel spring steel strips permitting oscillation along a horizontal line perpendicular to the rotor axis. Each bearing pedestal is so associated with its pick-ups as to form a

system having one d dom in a horizontal to both systems and axis.

Throughout the b production lot of rotor between the two corremains constant, as masses set into vibrat moduli of the supportive characteristics of etc. In production we of one lot are balance speed. Thus all factor to the relation between of unbalance in either resulting alternating force are kept constantions have no effect of tion.

#### Readings For Righ

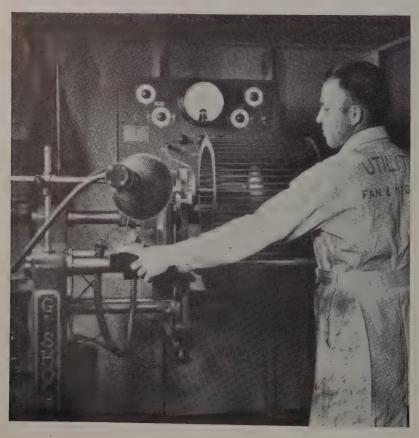
The cabinet contains the necessary power st trol for the stroboscopi in a reflector to the and an indicating ir measuring amount of and switches necessar ient operation. The dou the extreme right is an which selects one of th. two networks for opwith the switch at the position the indication. and stroboscope) apply end correction plane; w at the "left end" positi tions apply to the left

The center switch i amount switch" which output of which ever chosen by the "end sinto the alternating cument circuit or into the lamp circuit. The switch the group is a "sensiwith which either of t scales of different semble chosen. Dials sho cabinet are for use in a calibrating the balance ticular type of rotor.

The rotors are rotate and a motor. For facili and removing rotors mechanism, actuated by is provided.

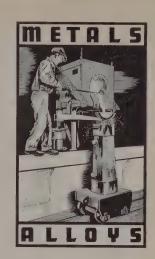
A minimum unbala amount sufficient to cat ing pedestals to vibrat inch amplitude can be the care of the inch unbalance at one plane of a 2-inch diar rotor. The accuracy of the care turn to Police turn to Police and the care of the care turn to Police turn to Police and the care of the care of

Use of new type Gishabalancing machine mad 300 per cent increase in by Utility Fan & Mic Angeles. It handles fan 21 inches in diameter. I finer balance is obt



# Increases Track Life

modification of Hadfield austenitic mangane steels aids weldability, increases wear restance and greatly simplifies maintenance of ilroad track equipment. Service records show extremely favorable results are obtained



STENITIC manganese ontaining 10 to 14 per nese (named Hadfield's ts discoverer) has cere properties that have important material for ations requiring resisrasive wear. But the his steel, owing to the e parent metal near the by the welding heat, ical until the recent deof a manganese-nickel g electrode, in which cent nickel was added mal carbon content re-

#### Lowers Carbon

g nickel to austenitic steel, it has been found on can be lowered, and ill will retain its austure. This lessens the or carbide formation itical-heat line in weldnce solves the problem elding.

ss of this steel in weldled to its use for both ought parts where weldimproved general propemanded in addition to quality of abrasion rewhich the original Hadnoted. It has been em-actorily in rolled applior welding onto wornl dipper teeth, crusher nd for building up worn A logical consequence ction of castings in this for such purposes, two which are described. turnout frogs cast in a

containing approxiper cent carbon, 13.80 anganese, 1.00 per cent 3.50 per cent nickel (avsition range for stand-

from Nickel Steel Topics, International Nickel Co.,

ard Hadfield steel is 1.00 to 1.40 per cent carbon, 10 to 14 per cent manganese, under 0.50 per cent silicon), were installed late in 1934 at the busiest location in the Chicago yards of the Chicago, Milwaukee, St. Paul & Pacific Railroad, where the most severe service is encountered. These frogs have stood up excellently during the ensuing period, being maintained by welding periodically without removal from the track. The railroad engineers originally planned to use oxyacetylene welding on one frog and arcwelding on the other. When the first repair by welding was effected, 2 years after the original installation, it was found that arcwelding was better as regards both efficiency and economy. Over a 4-year period, a total of \$128.00 has been spent for all maintenance on the two frogs-more than half of which was in the gas-welding experiment.

This service being highly satisfac-

This is the type of application where the nickel steel frogs are proving of value



tory, two later installations were made in crossings for the Milwaukee Road, in which one end frog and one center frog were of the manganese-nickel composition, the other end and center frogs being of standard 13 per cent manganese steel. This test installation was designed to give a definite comparison between the straight manganese steel and that with nickel added, since the same traffic would have to pass over both crossings. After two years' service for these composite frogs, Mr. C. E. Morgan, superintendent of work equipment and welding, says: "We have found no cracks in the manganese-nickel trackwork, and this, with its adaptability to maintenance by welding, seems to make it superior to the Hadfield steel."

Interesting additional data found in the experience of the Texas and New Orleans railroad (Southern Pacific system) with 47 selfguarded manganese nickel steel frogs which were used in the original construction of the terminal yards at Avondale, Louisiana and on various other track changes and additions in the New Orleans terminal in connection with the provision of facilities required to make use of the new bridge across the Mississippi river.

#### Give Better Service

These castings have been in regular service since the new facilities were put in use during the latter part of 1935. This railroad reports that their performance has been highly satisfactory, with no failures, and that the wear in this 3-year period has not as yet been sufficient to warrant restorative repairs by welding or otherwise. They are giving far better service than could be expected from the ordinary type of bolted rail frogs.

This manganese-nickel steel, known as Manganal, is produced manganese-nickel steel, under the patents of the Stulz-Sickles Co., of Newark, N. J. Typical properties of the castings, after a normalizing and drawing heat treatment are:

Tensile Strength	155,000
Yield Point	
Elongation in 2 inches	55%
Reduction of Area	. 35%

#### Fast Malleablizing

(Concluded from Page 69)

the charging position after they have been dumped. He then places two loaded trays in the charging cham-

Automatic temperature control is similar to that described in pusher type furnace except one additional zone of control is provided in the slow-cooling portion. An indicating pyrometer in the discharge end cooling section continuously indicates

discharge temperature.

Main drive for furnace is through a reciprocating pawl which drives ratchet wheels at one end of each of the rolls. Rolls near charging and discharge lock chambers are of overrunning construction to allow rotation at a higher rate of speed during charging and discharging operations. Sprockets at the opposite end of each of these rolls are connected to a high-speed drive.

To prevent damage to loaded rolls within the furnace chamber in the event of power failure, a gasoline engine of automotive type, with suitable drive mechanism and speed reducer, is available as an auxiliary

source of power.

Such roller-hearth furnaces are admirably adapted to use of radiant tubes and may be discharged completely in a short time. On types of work possessing sufficient length and a bottom surface of the correct character, the work can be moved through the hearth without the necessity of employing conveying trays or pans resulting in considerable additional economies.

## Quieter Machinery

(Concluded from Page 76)

indication for unbalance of the order of 0.05-ounce-inch in a 2-inch diameter motor rotor is within 3 per cent of error.

Features contributing to speed of indication include: No driving motor speed adjustments required, readings for both unbalance corrections made in a single run without stopping rotor, adjustments for each rotor are not necessary before taking readings, readings are in convenient units so no curves or calibration charts are required, errors have been reduced to the point where a single run is usually all that

is required, the machine is not hindered by building or floor vibrations, changes in set-up from one type or rotor to another can be quickly made, provided the dial settings for the new type are known.

With amount of unbalance in each plane being automatically indicated and its angular position being automatically located, it is possible to have the equipment described control emery wheels, etc., for subtracting weight in correct amounts and at correct locationsall automatically. Some experimenting has been done along this line.

### Ore Analysis Given Exhaustive Treatment

Technical Analysis of Ores and Technological Products, by Franklin G. Hills, second edition; fabrikoid, 250 pages, 5½ x 8½ inches; published by Chemical Publishing Co., New York; supplied by STEEL, Cleveland, for \$3; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London S. W. 1.

This volume contains much information of value to the metallurgical chemist, a contribution to nonferrous metallurgical literature. It covers analysis, not only of the usual ores and metallurgical products, but also of those of rarer occurrence about which information is not so readily available. Accepted methods of analysis for any particular substance are given, followed by information as to why certain methods are desirable in special cases.

A sharp distinction is drawn between cases where time is more valuable than absolute accuracy and those where accuracy is more important than time. An important feature deals with interfering elements, which are discussed in connection with all the methods given.

Important chemical reactions are shown, with discussion of the dissolving of ores. References are added to each chapter. The volume offers the chemist, student and engineer information on practically all proven methods of metallurgical analysis.

## Tin Is Toughened By Adding Tellurium

■ Tin alloys containing up to 1 per cent of tellurium have been investigated by the University of Birmingham, England.

Tellurium greatly improves creep strength of pure tin, and in amounts up to 0.1 per cent also improves tensile strength and hardness. The improvement in work-hardening capacity is remarkable in the case of chill cast alloys, but not when annealed prior to deformation.

This report, Publication No. 81,

may be had from I: Research and Develon 149 Broadway, New

### Wire Makers I Production Process

Third annual reg of the Wire association burgh, May 5, was fitt all-day tour of the Vi Electric & Mfg. Co. evening technical sessa w papers.

Dr. E. W. Engle, a Inc., Detroit, spoke in Dies, History, Maria Dies, History, Mar Use." He outlined the development of the e nace through develor of tungsten in dies methods of making formation of dies from of various binders in carbides was detailed summarized physical sintered die nibs a processes in preparing including design and of casings for the die

Effects of the die of resulting die wear finish requirements w Methods of applying f dies themselves were were the requiremen tion both for extendin improving surface fi wire. Methods of lub. described.

Problems in produc use of wire were dealt Caldwell, steel mill an ing section, Westingh & Mfg. Co., East Pitts outlined the mary ty which are used in elect tions, each of which premanufacturing probler materials as well as variety of sizes add to ties. Electrical equipm drawing machinery m ciently versatile to ca widely varying requirer a result a large amount been done in perfecti apparatus to suit the n drawing machinery

Dr. A. Allan Batt laboratory, Westinghou Mfg. Co., East Pitts spoke on annealing p special reference to pa bright annealing. He of and developments on c mospheres, and enumer special applications trolled atmosphere and nace, including treatme less wire. Importance finishes was stressed, refinements of current processes to produce be were suggested.



ord Motor Company has a well-earned repufor two outstanding accomplishments — conimproved product, and increasingly greater er value.

significant that this great company is using increasing number of Steel Castings — now t 149 pounds in the chassis of every cared.

#### R. H. McCarroll, Ford Metallurgist, says:

While numerous manufacturing advantages result change to steel castings, we would like to emphathat cast steel parts have almost always given a results in actual service, and always at least as. Another requirement is that the cast steel part the never weigh more. In almost all cases the weight been less."

a statement has authority. Ford never turns rners on two wheels. Performance must come

too can improve your product and save by a wider use of Steel Castings. Your local y will be glad to work with you. Or you may to consult Steel Founders' Society of America, om this advertisement is published. Address dland Bldg., Cleveland. No obligation, of course.

ROVE YOUR PRODUCT WITH

# STEEL CASTINGS BRING YOU THESE ADVANTAGES

- 1 Uniform structure, for greater strength, shock and stress resistance.
- 2 Metal distributed where it will do the most good; maximum strength with minimum weight.
- **3** Widest range of physical properties
- **4** Good machining qualities, low finishing costs, better streamlined appearance.
- **5** High rigidity, minimum deflection, accurate alignment, close tolerances and better fit.
- **6** Readily weldable in composite structures.
- 7 High fatigue resistance, maximum endurance and longer life ideal for critically stressed parts.

Steel Founders' Society

# TEEL CASTINGS



#### Spline Milling Machine

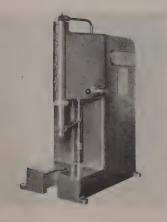
■ Taylor & Fenn Co., Hartford, Conn. has a 4-inch spline miller, M-80 to produce deep or shallow keyways on opposite sides of the same



piece or singly on two pieces simultaneously through slots or similar work. High spindle speeds and proper ratio of in-feed of cutter and table travel adapt it for use of small diameter cutters. Operator sets cutters, adjusts table, loads and unloads machine.

#### **Broaching Press**

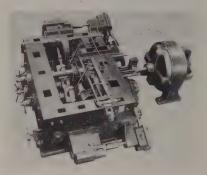
■ Colonial Broach Co., 147 Jos. Campau street, Detroit, has Junior broaching and assembly presses selling at well under \$500 similar



to larger standard line. Unit measures 31 inches in overall height, weighs 750 pounds and has a capacity of ½-ton. Stroke is adjustable up to 10 inches by means of sliding collars. Built-in oil tank has sight gage and 1000-pound pressure hydraulic pump. Direct-drive motor is fully-enclosed. Platen is 8 x 12 inches. Clearance between ram and machine frame is 5 inches.

#### Sizing Machine

■ Sutton Engineering Co., Park building, Pittsburgh, has put on the market a sizing, straightening and



polishing machine of the five cross roll type with four rolls driven. Screw-downs are furnished with All rolls are micrometer dials. angularly adjustable and roll brackets have dials for angular setting. Rolls on three roll side have adjustable center distances. Unit handles hot-roll steel as it comes from the mill. Bars .010 to .015-inch out of round are brought within .001 to .002-inch in one pass at 60 to 240 feet per minute. Sizing capacity is 1%-inch diameter, and 2½-inch for straightening and polishing. On tubes unit gives a rounding up effect equal to that on solid bars.

#### Belt Idlers

■ C. O. Bartlett & Snow Co., 6200 Harvard avenue, Cleveland, offers its



series 43 idlers with self-cleaning bases. Support brackets are assembled in jigs and slotted holes in mounting plates permit making slight adjustments in aligning. Labyrinth grease seals protect bearings. Tube connects bearing grease chambers.

## Metal Forming Press

■ French Oil Mill Machinery Co., Piqua, O., has developed a complete self-contained motor-driven hydraulically operated press for metal



forming and stampin built in capacities fror tons with corresponding Hydraulic pump, all operand pipe and fittings within head of press reservoir for hydra Equipment has shrund top and bottom kickey justable bronze faced automatic lubrication.

#### Head For Auton

■ The Eastern Machine New Haven, Conn., offe 1101 DM head for the & Sharpe Automatic pacity to 1-inch diam less than 2% inches and weighs slightly ov Die head has front



close-to-shoulder thread be tripped by pull-off. for length of thread is

### Heavy-Duty Lath

and Grand boulevard. St put on the market Hydi in sizes from 24 to 36 inc on front of headstock of 16 spindle speeds and shows spindle speed in per minute and cutting s



for any diameter of clutches are hydraunpensating as are pridle brakes, which related pressure to make Reverse to spindle or all speeds. When volutions per minute, be jogged to 20 or 30 to revolution by apronomis completely end front. All lubricanp, and if oil runs bevel, machine stops unis replenished. Monted on headstock or ate at rear of headerred.

#### Boring

Machine Co., Worcesas developed the Boreduty precision borfor multiple operations parts or progressive a similar parts. Its ave relative hydrauli-



d movement at right s are infinitely adjustange and tables travex rapidly. Travels of the in a cycle that can meet requirements.

#### Arc-Welder

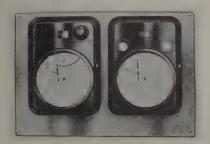
der & Metals Co., Inc., cy-second street, New mounced a direct-curlding motor-generator ting of 150 amperes at range of adjustment 0 amperes at 25 volts. three point current at rheostat control for



fine adjustment. Set uses electrodes up to 3/16-inch diameter. Welder has steady arc, and quick voltage recovery. It welds without current surges and does not lose arc when welding on thin sections. Portable model has rubber-tired casters.

#### Flow-Ratio Control

■ The Bristol Co., Waterbury, Conn., has developed a flow-ratio controller for automatically controlling rate of flow of one liquid or gas in definite ratio to flow of a second.



Ratio is changed by external adjustment. Unit consists of a flow-recorder and flow-recorder controller. Rate of flow is measured and recorded by one instrument, which also sets control point on the second. The latter records and controls flow proportionately to the first, depending on ratio selected.

#### Air Or Gas Receivers

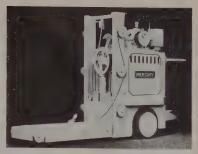
■ Ingersoll-Rand Co., Phillipsburg, N. J., offers air-receivers, to reduce pressure pulsations and aid in removing vapors, etc., rated for pressures of 125, 250, 350 and 500 pounds, all inspected by A.S.M.E. na-



tional board inspectors and shipped with complete equipment, including necessary hand-holes or man-holes.

#### Die Handling Truck

■ The Mercury Mfg. Co., 4044 South Halsted street, Chicago, has developed an electric industrial elevating platform die handling truck designated as model A-1006 and rated at 4000 pounds capacity. Load platform is 24 x 48 inches and elevates from lowered height of 9 inches to a maximum height of 52 inches, truck having overall height of 66 inches. Cables of winch hook on load and pull it onto load platform, which can be elevated to height of machine bed or storage rack. Cable sheaves are on up-



rights and "disappearing" sheaves are provided on nose of platform. Load is removed from platform by reversing direction of pull on cables.

#### Recording Thermometer

Meelco Instruments Co., 1929 South Halsted street, Chicago, has developed a recording thermometer, series 150, registering from 0 to 1000 degrees Fahr. Pen-arm is chromium plated at tip. Chart may be rotated by either spring-wound clock or synchronous motor.

#### Automatic Spray Gun

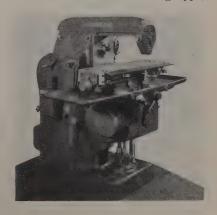
■ Binks Mfg. Co., 3114 Carroll avenue, Chicago, offers a streamlined automatic spray gun, known as Thor Model 21, with 3-way valve for cam, hand or foot operation of air plunger giving spraying results equal to those of hand-operated



guns. Lacquer, synthetic enamels and ceramic or vitreous materials can be sprayed by gun. List price is \$35.00.

#### Milling Machines

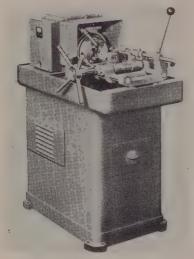
■ Cincinnati Milling Machine & Cincinnati Grinders Inc., Cincinnati, O., has introduced plain automatic milling machines, No. 1-12 and No. 1-18. Machines are manufacturing type,



combining high spindle speeds and fast feeds. No. 1-12 machine has power table travel of 12 inches and No. 1-18, 18 inches. Dog control, automatic table cycles with intermittent feeds, hydraulic back-lash eliminator, automatic spindle stop, screw feed and finger tip start-and-stop lever are features of machines. Sixteen spindle speeds, from 50 to 1500 revolutions per minute, are standard.

#### Bolt Machine

■ Oster Mfg. Co., 2057 East Sixtyfirst street, Cleveland, announces streamlined bolt machine with enclosed motor drive and gear-housing. Simplified holding jaw eliminates grease and chip-catching pockets.



Unit is made in bench type and with own base and can be adapted for chamfering, drilling, reaming, boring, tapping, etc.

#### Tests Gear Noise

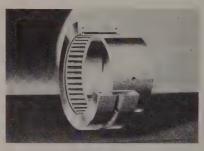
■ National Broach & Machine Co., Shoemaker and St. Jean streets, Detroit, announces Red Ring gear speeder to test gears for objection-



able noise. Gears are run at high speed inside an accoustical chamber and operator listens through hole at top of horn.

#### Needle Roller Bearing

McGill Mfg. Co., Valparaiso, Ind., has announced Solidend Multirol, a full type needle roller bearing said to increase load carrying capacity as



much as 12 per cent due to full-length rounded-end rollers. Rollers are held integral by outer race construction without use of end washers and retaining end-rings.

#### Trolley-Wire Guard

■ The Manhattan Rubber Mfg. division of Raybestos-Manhattan, Inc., Passaic, N. J., offers a red rubber insulating trolley-wire guard to protect mine workers from contact with trolley wire. Guard gives protection when struck from either side. Unit is not knocked down when trolley pole jumps wire.

#### A C Motor Starter

■ The Rowan Controller Co., 2313 Homewood avenue, Baltimore, has on the market 780 KBF combina-



tion oil-immersed across-the-line A. C. motor starter. A separate sealed wiring chamber prevents any oil or oil vapor from coming in contact with lead wires. Safety jack in separate wiring chamber is said to assure maximum of safety to maintenance man. When jack is removed, starter is dead.

#### Vernier Vise

■ Wesson Co., 1050 Mt. Elliott avenue, Detroit, has added a vernier



attachment on ever son universal vise, curacy of plus or m utes in setting angl

#### Center Punch

Lufkin Rule Co., offers an automatic with adjustable str punch is adaptable fd



for all marking. 'T right on work, dow is applied and blow matically. Force of lated by screwing k

### Variable Speed

■ Ideal Commutato Sycamore, Ill., nov Speed transmissions al to 7½-horsepow wheel control for justments and smalle speed. For remote wheel can be replace beveled gears, exte universal joint.

#### Coil Stock Cra

■ The Cleveland P Works Co., 3917. St Cleveland, offers a stock cradle handlin





International Derrick & Equipment Co., Columbus, Ohio Joslyn Co. of California, Los Angeles, Cal. Joslyn Mfg. & Supply Co., Chicago, Ill. L. O. Koven & Brother, Inc., Jersey City, N. J. Lehigh Structural Steel Co., Allentown, Pa. Missouri Rolling Mill Corp., St. Louis, Mo. The National Telephone Supply Co., Cleveland, Ohio Penn Galvanizing Co., Philadelphia, Pa. Riverside Foundry & Galvanizing Co., Kalamazoo, Mich. San Francisco Galvanizing Works, San Francisco, Cal. The Sanitary Tinning Co., Cleveland, Ohio Standard Galvanizing Co., Chicago, Ill. Wilcox, Crittenden & Co., Inc., Middletown, Conno., Cincinnati, Ohio

members of this association of quality galvanizers. Write for our literature and learn the truth about galvanizing. American Hot Dip Galvanizers Association, Inc., American Bank Bldg., Pittsburgh, Pa.

Cincinnati, Ohio

IF IT CARRIES THIS SEAL IT'S A JOB WELL DONE

52 inches outside diameter by 20 inches wide as a maximum. Supporting rolls are rubber covered to prevent marring surface of material and are arranged so as coil decreases in size, rollers continue to bear on outside of coil. Narrower coils can be accommodated. Cradle is power driven by a variable speed hydraulic unit.

#### Power Fast Travel

■ Brown & Sharpe Mfg. Co., Providence, R. T., has developed a light type, vertical milling machine with power fast travel. Machine has automatic longitudinal feed of 28



inches and transverse feed of 10 inches. It has 16 changes of speed from 55 to 1800 revolutions per minute in either direction. A fast travel rate of 76 inches per minute is provided in all longitudinal, transverse and vertical table movements in either direction. Directreading dial indicates speed engaged.

#### Bronze Pushers

■ Modern Collet & Machine Co., Ecorse, Mich., announces standard pushers of special bronze for work where scratching must be eliminated. Pushers have spring tension necessary for correct feeding. One pusher is needed for round and hexagon stock and one for round



and square stock. Pushers have long, flat surface grip and can be tightened without aid of special tools.

#### Electrode Dressers

■ Progressive Welder Co., 737 Piquette avenue, Detroit, offers airoperated hand-dressers of flat-plate and shank type to dress welding electrodes without removal from spot welders. Interchangeable blades take care of varying elec-



trodes. Cutter is held against tip until free running indicates correct radius has been restored.

#### Stamping Machine

■ H. O. Bates, Elizabeth, N. J., announces its name-plate stamping machine which has screw pressure, screw feed and ball bearing spring clutch. Base and frame are ribbed cast iron. Double slide table is %-inch steel and takes name-plates up to 5 x 8 inches. Machine is furnished with dies assembled. Metals and plastics can be stamped with machine. Height is 10% inches, distance front to back 8 inches and throat depth 3 inches. Price of machine is \$95.00 net f.o.b. Elizabeth. N. J.

#### Lubricating System

■ Gordon Lubricators division of Blaw-Knox Co., Blawnox, Pa., offers a lubrication system consisting of a manually-operated grease pump, control valve, grease strainer, pressure gage, positive displacement measuring valves, and single line system of piping. Pump holds eight



pounds of grease, has detachable handle as precaution against tampering and is filled either by hand or portable grease pump.

#### Sensitive Press Control

Hannifin Mfg. Co., 621 South Kolmar avenue, Chicago, has put on the market a 20-ton high speed straightening press with sensitive control permitting fingertip or light foot-control of pressure developed by ram. Initial movement of lever moves ram down rapidly at nominal pressure until it touches work and stops. Moving control lever beyond approach position causes



ram to exert prestion to distance I Pressure in tons is gage. Adjustable 1 nates unnecessary

#### Test Indicato

The L. S. Star Mass., offers indic having a range of sandths or in me Unit has reversible



joint contact point, and swiveling tubul

#### Rotary Files

Grobet File Corp-Park place, New Yo complete line of rota high speed steel ar

solid after hardening resharpened many ti

## Milling Attack

Fray-Mershon, I Cal., has introduced universal milling ment with or withou and having speeds for revolutions per min back gear attachmen revolutions per min pended from overar be swung all over o

n use can be lifted. Machine is caliical and horizontal mes with ½-horseand adapter to fit overarm.

#### e Spot Welder

ering Co., 740 South et, Newark, N. J., ed bench-type elects in sizes of ¼, ½, volt-amperes. Heat various thicknesses taps on secondary Speed ranges from per minute, dependof work. 1-kilovoltighs 45 pounds.

#### ead Cutter

ne Co., Waynesboro, ted a pipe and nipple for cutting tapered head advances un-



work contacts reams chasers to recede ads are formed, thus ered thread. Semieliminates necessity to propel head forwo or three threads, receding begins, prot action for chasers. feature is applicable internally tripped pipe

#### ank Press

hine Co., Minster, O., ne of 50 series double



crank straight-side presses. Press has 74-ton capacity with a bed length of 42 inches. Construction permits unbalanced load conditions to be set up without tilting slide. Box type crowns have section below center line of crankshaft as well as above. Press is powered by either air or hydraulic combination friction clutch and brake.

#### Portable Grease Gun

■ Pressurelube, Inc., 22 East Fortieth street, New York, offers a self-contained portable grease gun which is capable of handling heavy com-



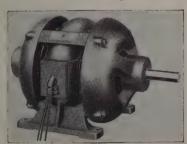
mercial greases such as Marfak No. 3. Pressures up to 12,000 pounds are controlled by regulator switch and pressure indicator. Storage battery and inbuilt charger furnish power.

#### Shim Stock Carton

■ Laminated Shim Co., Long Island City, N. Y., announces Kit No. 88-S containing four 6 x 50-inch rolls of steel shim stock in thicknesses of .001, .002, .003 and .005 inch. Carton stands on self-easel or may be hung on the wall. Shim stock, of any roll, is simply pulled through a slot in carton and cut off as needed, thus making even .001-inch thick steel shim stock readily available.

#### Lint-Free Motor

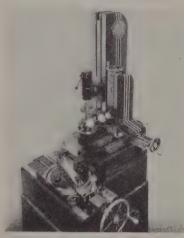
■ Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., announces a lint-free spinning-frame



motor with specially shaped rotor vanes to circulate air through motor at proper velocity to remove lint. Glass-smooth windings prevent lint from clinging. Air passages are extra large and there are no screens to require cleaning. This construction provides clear visibility inside.

#### Involute Checker

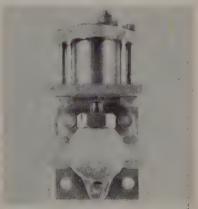
■ Michigan Tool Co., 7171 East Mc-Nichols road, Detroit, offers an involute checker to check gears from



pitch diameter using master racktooth which contacts gear-tooth. Full master base circle integral with work-holding spindle allows greater rotation of gear and work spindle. Sine-bar is mounted on carriage moved by lead screw. Unit checks gears up to 26 inches between centers, is streamlined and available in various column heights.

#### Pilot Valve

■ A. Schrader's Son division of Scovill Mfg. Co., 470 Vanderbilt avenue, Brooklyn, has developed a pilot valve to give a delayed or prolonged air blast for ejecting work from press after ram has stopped



upward motion. Screw adjustment on valve regulates duration of blast, and with vent closed, unit may be used as air control valve.

#### Air-Flow Mechanism

■ Bailey Meter Co., 1050 Ivanhoe road, Cleveland, has developed a diaphragm-operated air-flow mechanism for boiler meters on steam generating units with high static draft conditions. Air and steam flow and flue gas temperature are

recorded on a 12-inch diameter uniformly graduated chart in blue, red and green ink. Lines may cross or coincide without interference of recording pens.

#### Jackbit Grinder

■ Ingersoll-Rand Co., Phillipsburg, N. J., has developed a J-5 semi-automatic high-production jackbit grinder capable of producing an average of 60 hard bits or 100 annealed bits an hour. Gaging is done automatically before or after forming while operator forms face of bit. Large arbor hole permits using up practically all of wheel. Five thousand bits have been ground to gage with a single wheel. Pressure against wheel is applied by either hand or foot lever or both. Four-



point, six-point and Carr bits may be ground, and gaging head is adjustable for angles from 0 to 15 degrees.

#### Electric-Operated Valve

■ E. C. Atkins & Co., 402 South Illinois street, Indianapolis, has developed an electrically operated



valve for continuous operations on steam up to 150 pounds pressure. It has general application on automatic or remote control of liquid or gases. Line pressure is main actuating force. Valve has three moving parts; coil lifts pilot valve only at all pressures. It has full flow from % to 3 inches pipe sizes on pressures up to 300 pounds and maximum steam pressure of 150 pounds. Closing speed may be varied for individual requirements. Plunger is corrosion resistant and all parts are accessible without removing from line.

#### Fingerlift Truck

■ Clark Tructractor division of Clark Equipment Co., Battle Creek, Mich., has developed Stubby finger-



lift truck which is 38 inches wide, lifts load with 2-inch underclearance to 60 inches and travels at 1 to 7 miles per hour. Center of gravity is low and truck pivots on one wheel in making rightangle turns. Coupling is provided for towing. It is gas-powered for 24-hour continuous service.

#### Return Idler

■ Robins Conveying Belt Co., 15 Park Row, New York, has developed Rubberdisc return idler for conveyor belt handling abrasive, corrosive, damp or sticky material. Rubber disks spaced 6 inches apart except at ends where last two are 3



inches apart are mounted on a steel tube shaft inside of which are New Departure "lubricated for life" bearings. Idler turns easily, thus avoiding slippage of belt. Touching belt at only a few points, it cleans belt and itself.

#### Time Switch

■ Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., has marketed a time switch for operating electrical equipment. Timer is set manually to close circuit and mercury switch opens circuit automatically at any predetermined period from ½-hour to 11 hou not be overwound ed in standard swi x 3¼ x 5½ inches bronze, with knocl

#### Valve Actuate

Automatic Temp Co. Inc., 34 Eas Philadelphia, anno positive-travel valve ufactured by W. F. Co., Rockford, Ill.



erates horizontally Pressures over 16 square inch are p crushing or heating gency hand operat Compensating desi changes caused by a perature of valve p of actuator is pract

#### Twin Filter Re

■ Willson Products, street, Reading, Pa., a low-resistance two



rator for protection type A and lead dus ber form-fitted face wearing of goggles without visual intel filters each provic inches filtering surfa Bureau of Mines app

#### Priming Equip

■ DeLaval Steam Tuton, N. J., has develop suction priming equitrifugal pumps. Supump is automatical



and continuously breaking vacuum s the elevated succan be drained commed for upkeep and one to five minutes put pump into servin length and size of pump casing and normally kept full fter.

#### eparator

netic Mfg. Co., Miloffers a redesigned type magnetic sepoperation to remove n finely-ground ma-



ting feeder delivers naterial in uniform netic field where imemoved. In wet oper feed of slurry flows rese magnetic field. arrangement is availction of most feebly icles by subsequent the various magnetic

ectric Tool Co., Towounces a short light-



weight, sander buffer with dustproof rocker-type switch and reversible side handle for either right or left hand operation. High spindle speed, 3700 revolutions per minute, is for 7-inch sanding operations and the low speed, 1400 revolutions per minute, for buffing. Increased torque aids in rubbing down lacquer and paint.

#### Pressure Control

■ Minneapolis-Honeywell Regulator Co., 2950 Fourth avenue south, Minneapolis, has differential controllers with two bellows that oppose each other and react to variations in difference in pressure or temperature between elements. Differential Pressuretrol may be used



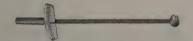
as an alarm device on cooling water systems. Differential thermostats are similar to Pressuretrols except they have temperature elements instead of pressure bellows.

#### Limit Switch

■ General Electric Co., Schenectady, N. Y., introduces a small, snapaction limit switch for operation in practically any position. It operates slowly without contact burning, and has oil and dirt proof die-cast case drilled for mounting on either back or side, silver-to-silver double-break contacts and two independent circuits. Over-center toggle mechanism gives positive snap-action. Roller-lever or push-rod head are available.

#### Torque Wrench

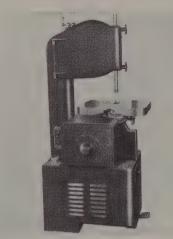
■ Bonney Forge & Tool Works, Allentown, Pa., has developed No. 56 Bonney torque-indicator wrench for obtaining uniform tension on bolts. By pulling on knurled handle grip which in turn bends spring



steel shaft even tension on bolts and studs is obtained. Scale, calibrated from 0 to 200 pound-feet, moves under pointer as pull is exerted. Wrench is equipped with ½-inch square adaptor. It is 23 inches long, chrome plated and weighs 3 pounds.

#### Open-End Band-Saw

■ Grob Brothers, Grafton, Wis., has marketed an open-end band-saw with positive drive to blade for sawing out dies, punches and stripper plates. Saw blades are 1/16,



3/32 and 1/8-inch wide. Blades 150 feet long are wound helically on a threaded-groove drum. Multiple-speed motor provides forward or cutting speeds and another motor reverses band at high speed. Blade can be used as notching tool or file as there are no welded joints. By using blade as a file, intricate dies can be finished within .001 to .002-inch of the line. Table tilts four ways and measures 20 x 20 inches. Throat is 14 inches and distance from floor to table, 40 inches.

#### Rivet Squeezer

■ Independent Pneumatic Tool Co., 600 West Jackson boulevard, Chicago, offers Thor rivet squeezer for use with 5/32-inch steel and 3/16-inch dural and aluminum rivets. Plunger can be installed and removed, without tools, by simply



pushing the holder backwards with fingers. Frame takes yokes with %-inch spacing between bolt holes. Pressure regulator makes possible driving both short and long rivets during the same operation without changing yoke or plunger. Rivet squeezer is 12 inches long and weighs 7½ pounds.

#### Thinner V-Belt

■ Dayton Rubber Mfg. Co., Dayton, O., announces Daytex Cord V-belt with higher tensile strength, lower stretch and minimum tendency to become lifeless. Belt runs cooler under high-speed flexing and

is about one fifth thinner than old type. Cord is made more compact by a bonding-compacting agent which removes nonessential oils on fibers, causing denser interlocking. Stretch is removed from belt during manufacture.

#### Hard Resurfacer

■ Flexrock Co., 2301 Manning street, Philadelphia, has added Montmorillonite to its Ruggedwear resurfacer, resulting in increased coverage capacity per pound and easier mixing with cement, sand and stone. It is recommended for "feather edge" concrete repairs,

and is claimed to last indefinitely when used as ½-inch topping over concrete.

#### Flow Recorder

■ Bailey Meter Co., 1050 Ivanhoe road, Cleveland, has a flow recorder to indicate and record instantaneous values of rate of flow as measured by displacement. Employing Bailey synchro-meter electrical transmitting method, unit draws graph of rate of flow against time instead of simply recording total flow over a given time. Synchro-meter is particularly useful in indicating and recording instantaneous rate of flow

of fluid which ca by orifice type me be used as a tach



ing or recording in of any rotating scially desirable for 5 revolutions per ments.

#### Burst-Proof

The B. F. Good O., introduces by hose in sizes from inches in diamete heat-resisting compatched steam pressure pounds per square heated steam up Fahr. On sizes larger, one ply of fabric and a spiral ment are placed by braids to prevent compatched in gwhen hose is on hose sizes 1-1 braided asbestos f

#### Rack Tape

Hanson-Van Wink Matawan, N. J., of for protecting racks used in electro-platiprotection again abcal and thermal si vides electrical insulin one-pound rolls, feet long and is at tion tape with % to is placed in air oven at 230-250 degrees Fa for use after coolin moplastic, the resingle homogeneous from cracks.

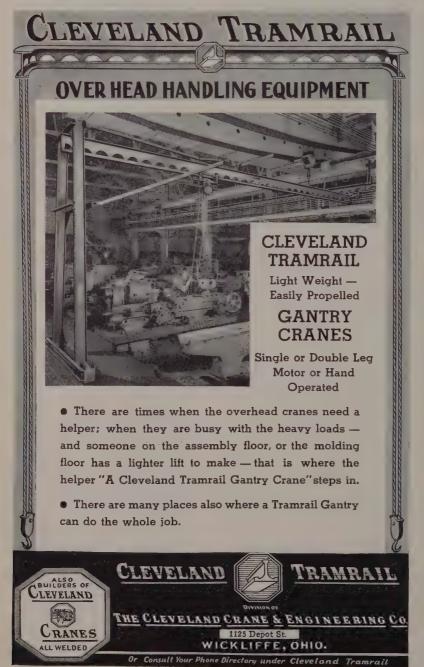
## Replaces Sand

Flexrock Co., 2300 Philadelphia, has of Roxite, pulverized bl diabase, for use wpatching material, strength cements, Poetc. It is said to dou of any concrete floo surfacing material.

#### Duplex Weldin

■ Manhattan Rubber of Raybestos-Manhat saic, N. J., has dev duplex hose for oxy

(Continued on



#### Railroad

strom Page 62)

ng enough to perells from one side he nozzle also has hich gives a rapid permits filling the cells as quickly as ich were adequate locomotives with d began service.

rolling stock and ntained at top effireadily apparent ions. Track is rock is laid with more recision. The locoare kept constantly they first left the

rial trucks also are terials handling in and the strip mill. item of equipment which has greatly ading of outgoing gunits vary widely e, wherein lies the ane.

kept continuously ity. Power is furries exchanged in hop by the same oyed for the loco-

### ding Hose

from Page 88)

welding equipment.
are integrally moldogether by a perint which prevents
og and snagging.
ted 18 inches for
hes for tank. Hose
one or two braid
raid and spiral cord
Inner tubes are
oporous, covers are
colored red and
guish oxygen from

#### Hoist

Co., Danville, Ill., market new spur s in capacities from thing from 86 to 169 ipped with diamond and governors conpeeds, load may be lion of an inch, and adjustment is poscopping of load. Ball brisealed and planems are sealed and

#### us Air

Schneible Co., 3951 evenue, Chicago, has Uni-Flo hood for ke-outs, knock-outs, gyrating screens, etc. Hoods operate at various angles, and long equipment or rows of machines can be ventilated by hoods in series. Relatively small plenum chamber and adjustable louvers spread suction of fan over a wide surface. Dirty air is washed by plain water and dust is reduced to sludge.

#### Hydraulic Pumps

■ Viking Pump Co., Cedar Falls, Iowa, offers hydraulic pumps in 50, 90 and 200-gallon per minute sizes for pressures up to 500 pounds per

square inch on oil free from grit and abrasives. Units have extra long packing boxes and are built in right angle port design. On 200-gallon size casing may be turned for either right or left hand port style.

#### Automatic Coupler

■ The Ohio Brass Co., Mansfield, O., has developed an automatic coupler for mine and industrial applications. Rubber buffing pads which absorb impact blows to 50,000 pounds replace usual draft



spring construction, conserving car capacity. Of male and female type, couplers engage automatically upon impact on curves of short radius without manual adjustment or prior alignment.

#### Lubricating System

■ The Farval Corp., 3249 East Eightieth street, Cleveland, has a system for lubricating small machines or a few bearings on larger machines from a single grease inlet. Unit consists of a multiple measuring valve block with a single inlet port and from two to eight lubricant outlets per block. A conventional hand or power grease-gun is connected to grease nipple at inlet port and rotary valve handle is moved in one direction and then the other to lubricate both sets of outlets. Movement of tell-tale indicator stem attached to each valve piston shows when bearing has re-



ceived its measured amount of lubricant.

#### Long Honing Machine

■ The Barnes Drill Co., Rockford, Ill., reports having built one of the largest internal honing machines in the world. Total overall length with work support bed is 184 feet. Portion shown is 92 feet long. Traveling head has an electric motor to rotate hone and shaft through pickoff gears. Fluid motor at the far end of the machine reciprocates hone. Work stroke of hone is 76 feet with power provided for honing diameters up to 30 inches.

#### Industrial Timer

■ Production Instrument Co., 704 West Jackson boulevard, Chicago, offers improved Signal-Graph which is operated by a synchronous motor and controlled by an electric switch and may be located at any distance from the machine. Unit automaticly measures processing time for which it has been set and signals operator when period has elapsed,



meanwhile recording processing time and loading or inactive time on a chart calibrated in minutes.

#### Claws Grasp Spike Head

Warren Tool Corp., Warren, O., announces a new automatic handoperated claw bar which eliminates need of driving claws under spike head. Replaceable, forged alloysteel jaws bite tightly into a slight amount of metal and hold firmly when strong leverage is applied. Ratchet permits spike or bolt to be pulled out straight in a series of bites.

#### Castable Refractory

■ Johns-Manville Corp., 22 East Fortieth street, New York, announces a light-weight, 24-hour, water-mix Firecrete for casting into refractory shapes. Working temperature is up to 2200 degrees Fahrand a high resistance to spalling allows exposure to flame. Although Firecrete weighs half as much as firebrick, its low heat-storage ca-

pacity makes it effective in retai

#### Vertical Gea

■ U. S. Electrica East Slauson ave



offers a vertical type GDV, comp base for vertical incorporates a s pump which fore bearings, gears ar

#### Portable Han

■ Black & Decker son, Md., has rede. portable electric h self-contained, and developed by a cra through a connecti



motor is no great working at full capidling. Hammer dev per minute and ha concrete or brick of

#### Geared-Head

■ Portman Machine gate avenue, New quiet operating go tric motors with sj on preloaded bearin offered in 1 to 5 hor with spindle speeds 3450 and 5600 revolute. Spindle nose e clude threaded shaft standard or special taper and chuck ty completely enclosed cooled; windings are





equipped with Fast's Couplings. Us of Carnegie-Illinois Steel Corp.

ing shows Fast's construction.
g surfaces are protected against
wear by a positive film
of oil. This oil is kept
permanently clean by the
rocking bearings which
make precise metal-tometal contact, and are in
the one position where
they form permanent dust
and moisture proof seals.

# THE STANDARD STANDARD

Steel men buy equipment on performance, because shut downs are too serious to risk. Steel mill engineers specify Fast's 'Self-aligning Couplings' because experience covering thousands of installations in hundreds of applications shows that Fast's Couplings last as long as the connected machines . . . and deliver all the time. If you want to be sure . . . be sure you get *genuine* "Fast's." Koppers Company, BARTLETT HAYWARD DIVISION, Baltimore, Md.

# ST'S COUPLINGS

OPPERS product

NATIONAL STEEL HIGH TENSILE ALLOY

# IS A High Tensile High-Ductile Steel



ITS INHERENTLY FINER GRAIN MAKES ALL THE DIFFERENCE



To the many desirable characteristics of high tensile steels National has added another—and perhaps the most important from a practical standpoint—DUCTILITY.

For the tough jobs—where high tensile properties must be combined with unusual ductility; for difficult applications where cold forming operations are too severe for ordinary high tensile steels—there you will find National Steel high tensile alloy meeting every requirement. For this steel, unlike

other high tensile steels, can be cold into such difficult shapes as those

If you have a production or engine that requires ductility in addition to National Steel high tensile alloy may you are looking for. Our engineers work with you in applying this HIC steel to your specific requirements.

National Steel high tensile alloy is sheets, strip, plates, bars and shapes



## GREAT LAKES STEEL CORPORATION · DETROIT, MIC

DISTRICT OFFICES: Boston, 1001 Statler Building; Buffalo, 1000 Walbridge Building; Chattanooga, Hamilton Bank Building; Chica Building; Cleveland, 820 Leader Building; Dayton, 846 Third National Bank Building; Indianapolis, 1215-17 Circle Tower; New Yor Avenue; Philadelphia, 407 Liberty Trust Building; St. Louis, 3615 Olive Street; San Francisco, 824 Sharon Building; Toledo, 906

EIVISION OF

NATIONAL STEEL CORPOR

# okness In Prices Overshadows Market

# More Resistance Shown To Decline In Steel Orders, Output

overshadowed by unsettlement in colled products, the recent downward edemand and production is meeting incorporate.

steelmaking rate declined 2 more points ast week, a new low for the year. Howdition was caused almost entirely by an Pittsburgh and was influenced partly uation. With at least partial resumpnow in prospect, a moderate stimulus and operations may be looked for.

g on sheets and strip, localized in the tor several weeks, has become fairly prices named generally have been \$4 previous quotations, with more severe no certain instances. Some further conversulted from loose application of quantle. Plate prices also have weakened in

e price situation on orders remains to . While similar concessions last fall products elicited heavy anticipatory buy-motive industry today is in a less adsition, because of the season, to make se for immediate delivery. At the same mptness with which the last price war sexpected to induce some consumers a needs, rather than assume the lower ecome permanent.

#### nd Tends Upward Some Districts

small gains in finished steel demand, om miscellaneous consumers, have levine of business in some districts. In a slight increase has occurred over booking ago. Better demand has appeared irm implement and road machinery buildie production is sustained at 70 per cent higher shortly. Orders from railroads it will be aided by resumption of coal

esteel buying, recently at a low ebb, spected to turn upward with additional f 1940 model material. Meanwhile, mo-

# MARKET IN TABLOID\*

## Demand

Steadier; small betterment appears in some areas.

# Prices\_

Sheets, strip shaded \$4 or more; plates easier.

Production

Declined 2 points to 47 per cent.

torcar assemblies are fairly steady following a sharp reduction a week ago. Last week assemblies rose nearly a thousand units on an increase of that amount by the smaller interests. General Motors' output dropped from 27,260 to 27,120; Chrysler increased from 17,590 to 17,690 and Ford held at 16,900. Production by all others rose from 9670 to 10,665.

Movement of steel products out of warehouse is steady or higher than in April in most districts. Foundries are taking pig iron at a rate little changed from that a month ago. Foundry coke shipments have been stimulated this month by fears of a shortage, although supplies remain ample.

#### Outlook For Railroad Car Buying Still Unfavorable

Betterment in railroad earnings so far this year has been insufficient to stimulate the carriers to proceed with major programs for equipment buying. Few inquiries for freight cars are active and the track material buying season largely has been completed. Mill backlogs, consequently, are receding steadily.

Business in structural shapes and concrete bars apparently has reached a peak for the time being. Relatively heavy shipments against old orders and contracts in early prospect will extend into next quarter. A large volume of business in ship plates is in sight for coming months.

Most steelmaking districts held to unchanged operations last week. In addition to the 8-point drop to 36 per cent at Pittsburgh, Youngstown slipped 1 point to 42 and Chicago dipped ½ point to 46½. Eastern Pennsylvania was up 1 point to 37 and Cleveland rose 1 point to 45½.

Unchanged areas included Wheeling at 64, Buffalo at 35, Birmingham at 55, New England at 45, Cincinnati at 52, St. Louis at 51 and Detroit at 59.

Scrap markets generally are dull, with prices easy. In the East a heavy purchase by the European cartel, expected to total 400,000 tons, is a sustaining factor. The scrap composite is unchanged at \$14.12. Lower prices on sheets and strip have reduced the finished steel composite 80 cents to \$55.70.

# COMPOSITE MARKET AVERAGE

May 13	May 6	Apr. 29	One Month Ago Apr., 1939	Three Months Ago Feb., 1939	One Year Age May, 1938
Iron and Steel \$35.72	\$36.21	\$36.26	\$36.34	\$36.37	\$38.50
Finished Steel 55.70	56.50	56.50	56.50	56.50	61.70
Steelworks Scrap 14.12	14.12	14,21	14.64	14.87	11.47

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, she pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plathot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

## COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and

Finished Material Ma	y <b>13, Apri</b> 1939 1939		May 1938	Pig Iron	May 13, 1939	Apri 1939
Steel bars, Pittsburgh	2.25c 2.25c	e 2.25c	2.45c	Bessemer, del. Pittsburgh	\$22.34	\$22.34
Steel bars, Chicago	2.25 2.25	2.25	2.50	Basic, Valley	20.50	20.50
Steel bars, Philadelphia	2.57 2.57	2.57	2.77	Basic, eastern, del. Philadelphia	22.34	22.3
	2.15 2.15	2.15	2.35	No. 2 foundry, Pittsburgh	22.21	22.2
	2.10 2.10	2,10	2.25	No. 2 foundry, Chicago		21.00
Disapos,	2.215 2.215	2.215	2.465	Southern No. 2, Birmingham		17.38
	2.10 2.10	2.10	2.30	Southern No. 2, del. Cincinnati.		20.89
	2.10 2.10	2.10	2.25	No. 2X, del. Phila. (differ. av.)		23.2
	2.15 2.15	2.15	2.445	Malleable, Valley		21.00
	2.10 2.10	2.10	2.30	Malleable, Chicago		21.00
	1.95c 2.15	2.15	2.40	Lake Sup., charcoal, del. Chicago		28.34
	3.00c 3.20	3.20	3.45	Gray forge, del. Pittsburgh		21.1
	3.50 3.50	3.50	3.80	Ferromanganese, del. Pittsburgh	85.33	85.3
	1.95c 2.15	2.15	2.50	Camana		, 3
	3.00c 3.20	3.20	3.25	Scrap		1
	3.50 3.50	3.50	3.90	Heavy melting steel, Pittsburgh	. \$14.75	\$15.5
	2.60 2.60	2.60	2.90	Heavy melt. steel, No. 2, E. Pa	. 12.75	13.6
	\$5.00 \$5.00	\$5.00	\$5.35	Heavy melting steel, Chicago	. 12.75	13.3
Wire nails, Pittsburgh	2.45 2.45	2.45	2.75	Rails for rolling, Chicago	. 17.25	17.27
Change Colored No. 1 1 1				Railroad steel specialties, Chicag	o 14.75	15.3
Semifinished Material				CI-1		
Sheet bars, Pittsburgh, Chicago \$	34.00 \$34.00	\$34.00	\$37.00	Coke		
Slabs, Pittsburgh, Chicago		34.00	37.00	Connellsville, furnace, ovens	. \$3.75	\$3.7
	34.00 34.00	34.00	37.00	Connellsville, foundry ovens		
	43.00 43.00	43.00	47.00	Chicago, by-product fdry., del		10.50
32,	20.00					

#### STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, t.o.b. cars.

Sheet Steel	
Hot Rolled	
Pittsburgh Chicago, Gary Cleveland Detroit, del. Buffalo Sparrows Point, Md. New York, del. Philadelphia, del. Granite City, Ill. Middletown, O. Youngstown, O.	1.95e 1.95e 1.95e 1.95e 1.95e 2.19c 2.19c 2.19c 2.05e 1.95e
Birmingham	1.95c 2.45c
Cold Rolled	
Pittsburgh Chicago, Gary Buffalo Cleveland Detroit, delivered Philadelphia, del. New York, del. Granite City, Ill, Middletown, O. Youngstown, O. Pacific Coast points	3.00c 3.00c 3.00c 3.00c 3.10c 3.32c 3.34c 3.10c 3.00c 3.00c 3.60c
Galvanized No. 24 Pittsburgh Chicago, Gary Buffalo Sparrows Point, Md Philadelphia, del. New York, delivered Birmingham	3.50c 3.50c 3.50c 3.50c 3.67c 3.74c 3.50e

Granite City, Ill Middletown, O.		3.60c 3.50c
Youngstown, O.		3.50c
Pacific Coast po	ints	4.00c
Black Plate, No. Pittsburgh Chicago, Gary Granite City, Ill.		3.05c 3.05c 3.05c 3.15c
Long Ternes No.		
Pittsburgh, Gar		3.95c
Pacific Coast		4.65c
Enameling	Sheets	
	No. 10	No. 20
Pittsburgh		No. 20 3.35c
Pittsburgh Chicago, Gary	No. 10	
	No. 10 2.75c	3.35c
Chicago, Gary Granite City, Ill.	No. 10 2.75c 2.75c	3.35c 3.35c
Chicago, Gary Granite City, Ill. Youngstown, O.	No. 10 2.75e 2.75e 2.85e 2.75e	3.35c 3.35c 3.45c
Chicago, Gary Granite City, Ill. Youngstown, O. Cleveland	No. 10 2.75e 2.75e 2.85c 2.75e 2.75e	3.35c 3.35c 3.45c 3.35c 3.35c
Chicago, Gary Granite City, Ill. Youngstown, O. Cleveland Middletown, O.	No. 10 2.75e 2.75e 2.85e 2.75e 2.75e 2.75e	3.35c 3.35c 3.45c 3.35c 3.35c 3.35c
Chicago, Gary Granite City, Ill. Youngstown, O. Cleveland	No. 10 2.75e 2.75e 2.85c 2.75e 2.75e	3.35c 3.35c 3.45c 3.35c 3.35c
Chicago, Gary Granite City, Ill. Youngstown, O. Cleveland Middletown, O. Pacific Coast	No. 10 2.75e 2.75e 2.85e 2.75e 2.75e 2.75e 2.75e 3.35e	3.35e 3.35e 3.45e 3.35e 3.35e 3.95e
Chicago, Gary Granite City, Ill. Youngstown, O. Cleveland Middletown, O. Pacific Coast	No. 10 2.75e 2.75e 2.85e 2.75e 2.75e 2.75e 2.75e 3.35e	3.35e 3.35e 3.45e 3.35e 3.35e 3.95e

Corrosion and Resistant A	
Pittsburgh base, cer	nts per lb.
Chrome-Nicl	kel
No. 3	302 No. 304
Bars 24.	00 25.00
Plates 27.	00 29.00
Sheets 34.	00 36.00
Hot strip 21.	50 23.50
Cold strip 28.	00 30.00
Straight Chro	mes
No. No.	No. No.
410 430	442 446
Bars 18.50 19.00	22.50 27.50

, p.,000		04.,0,	,	010101
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold stp.	.22.00	22.50	28.50	36.50

# Steel Plate

Pittsburgh	2.10c
New York, del 2.19c	-2.29c
Philadelphia, del	2.15c
Boston, delivered	2.42c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, base	2.10c
Sparrows Point, base	2.10c
Claymont, del	2.10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast points	2.60c
Steel Floor Plates	

Chicago	3:350
Gulf ports	3.700
Pacific Coast ports	3.95
Pittsburgh	3.35

## Standard Shapes

The state of the s	
Pittsburgh	
Philadelphia, del2	.21 % c
New York, del	2.27c
Boston, delivered	2.41c
Bethlehem	
Chicago	2.10c
Cleveland, del	2.30c

Buffalo	,			
Gulf po	orts			
Birmin	gha	m		
St. Lou	is,	d	el.	
Pacific	Co	as	t	P

# Tin and Te

Pittsburgh, Gary Granite City, I Mfg. Terne Pla Pittsburgh, Gary Granite City, I

#### Bars

(Base, 3 te Pittsburgh Chicago or Gary Duluth Birmingham Cleveland Buffalo Detroit, delivere Philadelphia, del Boston, delivere New York, del. Gulf ports Pacific Coast poli

Rail S
(Base, 15 to
Pittsburgh
Chicago or Gary
Detroit, delivered
Cleveland

2.10c 2.10c	Strip and Hoops	Pitts., Chi., Cleve65-10 off	2" O. D. 13 13.04 15.03
2.10c 2.45c		Wrought washers, Pitts., Chi., Phila., to jobbers	2¼"O.D. 13 14.54 16.76 2¼"O.D. 12 16.01 18.45
; 2.70c	(Base, hot-rolled, 1 to 20 tons; cold-rolled, 3 to 25 tons) Hot Strip, 12-inch and less	and large nut, bolt	2½" O. D. 12 17.54 20.21
aute 2.15c	Pittsburgh, Chicago,	mfrs. l.c.l. \$5.40; c.l. \$5.75 off	2%"O.D. 12 18.59 21.42 3"O.D. 12 19.50 22.48
2.47c	Gary, Cleveland, Youngstown, Middle-	Welded Iron,	3½"O.D. 11 24.62 28.37
ing	town, Birmingham 1.95c	Steel Pipe	4½"O.D. 10 37.35 43.04
ght lengths, stributors	Detroit, del 2.05c Philadelphia, del 2.27c	Base discounts on steel pipe.	5" O.D. 9 46.87 54.01
Buffalo	New York, del 2.31c	Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points	
ltts 2.05c	Cooperage hoop, Youngs., Pitts., Chicago, Birm 2.25c	less on lap weld, 1 point less	Cast Iron Pipe
2.15c	Cold strip, 0.25 carbon	on butt weld. Chicago delivery 2½ and 1½ less, respectively.	Class B Pipe—Per Net Ton
2.40c 2.50c	and under, Pittsburgh, Cleveland, Youngstown 2.75c	Wrought pipe, Pittsburgh base.	6-in., & over, Birm\$42.00-43.00 4-in., Birmingham 45.00-46.00
2.22c	Chicago 2.85c	Butt Weld	4-in., Chicago 53.80-54.80
tributors	Detroit, del 2.85c Worcester, Mass 2.95c	Steel	6-in. & over, Chicago 50.80-51.80 6-in. & over, east fdy. 46.00
Chi-	Carbon Cleve., Pitts.	In. Blk. Galv. 63½ 54	Do., 4-in 49.00
am 1.90c	0.260.50	¾ · · · · · · · 66 ⅓ 58	Class A Pipe \$3 over Class B Stnd. fitgs., Birm., base \$100.00
2.00c 2.25c	0.76—1.00 5.95c	1—3 68½ 60½ Iron	Semifinished Steel
, 2.35c	Over 1.00 8.15c Worcester, Mass \$4 higher.	% 30 13	
	Commodity Cold-Rolled Strip	1—1¼ 34 19 1½ 38 21½	Rerolling Billets, Slabs (Gross Tons)
:ts	PittsCleveYoungstown 2.90c	2 37½ 21	Pittsburgh, Chicago, Gary,
go-Birm. base in carloads	Detroit, del 3.00c Worcester, Mass 3.30c	Lap Weld	Cleve., Buffalo, Young.,
ls \$2.45	Lamp stock up 10 cents.	Steel 2 61 52 ½	Birm., Sparrows Point. \$34.00 Duluth (billets) 36.00
lls \$2.45 (ind)	Rails, Fastenings	2½—3 64 55½	Detroit, delivered 36.00
3.15c	(Gross Tons)	3½-6 66 57½ 7 and 8 65 55½	Forging Quality Billets
s 3.40c , stand-	Standard rails, mill \$40.00	9 and 10 64½ 55	Pitts., Chi., Gary, Cleve., Young., Buffalo, Birm. 40.00
e two-	Relay rails, Pittsburgh	11 and 12 63½ 54	Duluth 42.00
d spool cattle,	20—100 lbs 32.50-35.50 Light rails, billet qual.,	Iron 2 30 ½ 15	Sheet Bars Pitts., Cleveland, Young.,
\$2.62	Pitts., Chicago, B'ham. \$40.00 Do., rerolling quality 39.00	2½—3½ 31½ 17½	Sparrows Point, Buf-
/ire 2.95c	Cents per pound	4 33 ½ 21 4 ½ —8 32 ½ 20	falo, Canton, Chicago 34.00 Detroit, delivered 36.00
g (base	Angle bars, billet, mills. 2.70c Do., axle steel 2.35c	9—12 28½ 15	Wire Rods
e ties,	Spikes, R. R. base 3.00c	Line Pipe	Pitts., Cleveland, Chicago, Birmingham No. 5 to $\frac{9}{32}$ -
mn) 56.00	Track bolts, base 4.15c Car axles forged, Pitts.,	Steel 1 to 3, butt weld 67 1/2	inch incl 43.00
ring Trade vs Chicago-	Chicago, Birmingham. 3.15c	2, lap weld 60	Do., over $\frac{9}{22}$ to $\frac{47}{64}$ -in. incl. 48.00 Worcester up \$2; Galveston
xcept spring	Tie plates, base 2.15c Base, light rails 25 to 60 lbs.,	2½ to 3, lap weld 63 3½ to 6, lap weld 65	up \$6; Pacific Coast up \$9.
wire 2.60c 2.65c	20 lbs., up \$2; 16 lbs. up \$4; 12	7 and 8, lap weld 64	Skelp Bitta Chi Young Buff
3.20c	lbs. up \$8; 8 lbs. up \$10. Base railroad spikes 200 kegs or	10-inch lap weld 63 ½ 12-inch, lap weld 62 ½	Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt. 1.90c
\$2 higher on ad spring wire.	more; base plates 20 tons.	Iron	Colo
opining	Bolts and Nuts	Blk. Galv. % butt weld 25 7	Coke
	Pittsburgh, Cleveland, Bir-	1 and 1% butt weld 29 13	Price Per Net Ton Beehive Ovens
irgh\$3.60	mingham, Chicago. Discounts to legitimate trade as per Dec.	1½ butt weld 33 15½ 2 butt weld 32½ 15	Connellsville, fur \$3.75
	1, 1932, lists, carloads 5% up; full containers additional 10%.	1½ lap weld 23½ 7	Connells ville, fdry. 4.75-5.50 Connell. prem. fdry. 5.75-6.25
ed Bars	Carriage and Machine	2 lap weld 25½ 9 2½ to 3½ lap weld 26½ 11½	New River fdry 6.50- 6.75
Carbon Alloy	½ x 6 and smaller68.5 off	4 lap weld 28½ 15	Wise county fdry 5.50- 5.75 Wise county fur 4.50- 4.75
2.70c 3.40c 2.70c 3.40c	Do. larger, to 1-in66 off Do. 1% and larger64 off	4½ to 8 lap weld 27½ 14 9 to 12 lap weld 23½ 9	By-Product Foundry
2.70c 3.40c	Tire bolts		Newark, N. J., del 10.88-11.35
2.75e *3.50e 2.70e 3.40e	Stove Bolts	Boiler Tubes	Chi., ov., outside del. 9.75 Chicago, del 10.50
2.70c 3.40c	In packages with nuts attached 72.5 off; in packages with	Carloads minimum wall seam- less steel boiler tubes, cut	Milwaukee, ovens 10.50
	nuts separate 72.5-12½ off;	lengths 4 to 24 feet; f.o.b. Pitts-	New England, del 12.50 St. Louis, del 11.00-11.50
(Hot)	bulk 84 off on 15,000 of 3-inch and shorter, or 5000 over 3-in.	burgh, base price per 100 feet subject to usual extras.	Birmingham, ovens. 7.00 Indianapolis, del 10.00
25 tons)	Step bolts	Lap Welded	Cincinnati, del 9.75
ilo, Chi-	Plow bolts68.5 off	Char- coal	Cleveland, del 10.30 Buffalo, del 10.50
n, Can-	Nuts	Sizes Gage Steel Iron	Detroit, del 10.25
2.90c	Semifinished hex. U.S.S. S.A.E. 6-inch and less. 67 70	1½"O, D. 13 \$ 9.72 \$23.71 1¾"O, D, 13 11.06 22.93	Philadelphia, del 10.65
S.A.E. Alloy	<sub>16</sub> -1-inch 64 65	2" O. D. 13 12.38 19.35 24" O. D. 13 13.79 21.68	Coke By-Products
31000.70 32001.35	1% and larger. 62 62	2¼"O.D. 12 15.16	Spot, gal., freight allowed east
33003.80	Hexagon Cap Screws Upset, 1-in., smaller67.5 off	2½"O.D. 12 16.58 26.57 2¾"O.D. 12 17.54 29.00	of Omana
34003.20 Mo0.55	Square Head Set Screws	3" O.D. 12 18.35 31.36	Pure and 90% benzol 16.00c Toluol, two degree 22.00c
Mo. 1.50-	Upset, 1-in., smaller 75.0 off	3½" O. D. 11 23.15 39.81 4" O. D. 10 28.66 49.90	Solvent naphtha 26.00c
1.10	Headless set screws70.0 off	5" O. D. 9 44.25 73.93	Industrial xylol 26.00c  Per lb. f.o.b. Frankford and
lats 0.15	Piling Pitts., Chgo., Buffalo 2.40c	6" O. D. 7 68.14 Seamless	St. Louis
1.20	Pitts., Chgo., Buffalo 2.40c Gulf ports 2.75c	Hot Cold	Phenol (200 lb. drums) 16.25c Do. (450 lbs.) 15.25c
1.50	Rivets, Washers	Sizes Gage Rolled Drawn	Eastern Plants, per lb.
0.85		1" O. D. 13 \$ 7.82 \$ 9.01 1%" O. D. 13 9.26 10.67	Naphthalene flakes, balls, bbls. to jobbers 5.75c
s, squares 0.40	Cleveland, Chicago 3.40c	1½"O.D. 13 10.23 11.79	Per ton, bulk, f.o.b. port
ce up 50 cents.	78-inch and smaller,	1%"O.D. 13 11.64 13.42	Sulphate of ammonia\$28.00

Pig Iron	Fdry. able s
Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil, above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.	St. Louis, northern       21.50         St. Louis from Birmingham       †21.12         St. Paul from Duluth       23.63         †Over 0.70 phos.
No. 2 Malle- Besse- Basing Points: Fdry. able Basic mer	Low Phos.
Bethlehem, Pa.       \$22.00       \$21.50       \$23.00         Birdsboro, Pa.       22.00       22.50       21.50       23.00         Birmingham, Ala.‡       17.38       16.38       22.00	Basing Points: Birdsboro and Steelton, Pa., and \$26.50, base; \$27.74 delivered Philade Gray Forge Ch?
Buffalo       21.00       21.50       20.00       22.00         Chicago       21.00       21.00       20.50       21.50	Valley furnace\$20.50 Lake Superior Pitts. dist. fur 20.50 do., del Chi
Cleveland     21.00     21.00     20.50     21.50       Detroit     21.00     21.00     20.50     21.50       Duluth     21.50     21.50      22.00	Lyles, Tenn †Silvery
Eric, Pa. 21.00 21.50 20.50 22.00 Everett, Mass. 22.00 22.50 21.50 23.00 Granite City, III. 21.00 21.00 20.56 21.50	Jackson county, O., base: 6-6.50 per cent \$25.5 7-7.50—\$26.50; 7.51-8—\$27.00; 8-8.50—\$27.50 9-9.50—\$28.50; Buffalo, \$1.25 higher.
Hamilton, O	Bessemer Ferrosilicon† Jackson county, O., base; Prices are the same
Provo, Utah	plus \$1 a ton. †The lower all-rail delivered price from Jackso
Sparrow's Point, Md	is quoted with freight allowed.  Manganese differentials in silvery iron and ferror
Toledo, O.       21.00       21.00       20.50       21.50         Youngstown, O.       21.00       21.00       20.50       21.50	\$1 per ton add. Each unit over 3%, add \$1
‡Subject to 38 cents deduction for 0.70 per cent phosphorus	Refractories Imported dead
or higher.  Delivered from Basing Points:	Per 1000 f.o.b. Works, Net Prices grains, net Fire Clay Brick Super Quality Timore bases
Akron, O., from Cleveland 22.39 22.39 21.89 22.89	Pa., Mo., Ky
Baltimore from Birmingham 22.78 21.66 Boston from Birmingham 22.12	Alabama, Georgia 47.50 net ton, bag
Boston from Everett, Mass.       22.50       23.00       22.00       23.50         Boston from Buffalo       22.50       23.00       22.00       23.50	New Jersey 52.50 Quickset man Second Quality Pa., Ill., Ky., Md., Mo 42.75
Brooklyn, N. Y., from Bethlehem 24.50 25.00 Canton, O., from Cleveland 22.39 22.39 21.89 22.89	Georgia, Alabama 34.20 Basid
Chicago from Birminghom †21.22 Cincinnati from Hamilton, O 21.24 22.11 21.61	Ohio mouth Meetr
Cincinnati from Birmingham 21.06 20.06 Cleveland from Birmingham 21.32 20.82	Intermediate 36.10 Chem. bonded
Mansfield, O., from Toledo, O 22.94 22.94 22.44 22.44 Milwaukee from Chicago 22.10 22.10 21.60 22.60	Malleable Bung Brick Chem, bonded
Muskegon, Mich., from Chicago, Toledo or Detroit 24.19 24.19 23.69 24.69	Silica Brick \$56.05 Fluorspor
Newark, N. J., from Birmingham 23.15  Newark, N. J., from Bethlehem. 23.53  24.03  Dilidalphia from Birmingham 23.46	Pennsylvania \$47.50 Washed grav Joliet, E. Chicago 55.10 paid, tide, n
Philadelphia from Birmingham. 22.46 21.96 Philadelphia from Swedeland, Pa. 22.84 23.34 22.34 Pittsburgh district from Neville (Neville base, plus 69c, 84c,	Birmingham, Ala 47.50 Washed gravel Ladle Brick Ky., net ton
Island	(Pa., O., W. Va., Mo.) all rail  Dry press
Sugmert, Main, Main, Sectors. 20.10 20.20 22.00	Wife Cut \$20.00 NO. 2 lump.
Ferromanganese, 78-82%, bon, per 1b. contained	oy Prices
tidewater, duty pd \$80.00 chrome	carlots, contr., net ton.\$142.50 contract, eal Do, spot 145.00 %-in., lb. Do, contract, ton lots 145.00 Do, 2%
Spiegeleisen, 19-21% dom. Do., less-ton lots 17.75c	Do, spot, ton lots 150.00 Spot
Palmerton, Pa., spot. 28.00 Car- Ton Less Do., 26-28%, Palmer- loads lots ton	15-18% tl., 3-5% carbon, carlots, contr., net ton 157.50 carloads fr
ton	Do, spot 160.00 lowed, ton Do, contract, ton lots. 160.00 Carload, spc
allowed, c.l	Do, spot, ton lots 165.00 Less-ton lots  Alsifer, contract carlots, Manganese B
Do., 75 per cent 126.00 Spot 4c higher Spot, \$5 a ton higher. Ferromolybdenum, 55-	f.o.b. Niagara Falls, lb. 7.50c contract call Do, ton lots 8.00c bulk freight
Silicoman, 2½ carbon 88.00 65% molyb. cont., f.o.b. 2% carbon, 93.00; 1%, 103.00 mill, 1b 0.95	Do, less-ton lots 8.50c lb Spot ½c lb. higher to Ton lots
Contract ton price \$11 Calcium molybdate, lb.	Chromium Briquets, con- tract, any quantity,  Less-ton lots Spot 4
contract.  Ferretungsten stand in Ferretitanium, 40-45%,	freight allowed, lb 7.25c Zirconium Allo Do, spot carlots, bulk 7.50c contract,
con. del. cars1.60-1.65 ara Falls, ton lots \$1.23	Do, ton lots 8.00c gross ton Do., less-ton lots 8.25c Do, spot
Ferrovanadium, 35 to Do., less-ton lots 1.25 40%, lb., cont 2.70-2.80-2.90 20-25% carbon, 0.10	Tungsten Metal Powder, according to grade, loads, lb., al
Ferrophosphorus, gr. ton, cl., 17-18% Rockdale, Do, less-ton lots 1.40 Tenn. basis 18% \$3  Spot 5c higher	spot shipment, 200-lb. Do, ton lots drum lots, lb
unitage, 58.50; electro- Ferrocolumbium, 50-60%,	Do, smaller lots 2.10 Spot *
lytic, per ton, c. l., 23- contract, lb. con. col., 26% f.o.b. Monsanto, f.o.b. Niagara Falls \$2.25	contract, Ib. contained \$1.10 99%, f.o.b.
Tenn., 24% \$3 unitage 75.00 Do, less-ton lots 2.30 Ferrochrome, 66-70 chro- Spot is 10c higher	Chromium Metal, 98% Do, 100-200
mium, 4-6 carbon, cts. Technical molybdenum lb., contained cr., del. trioxide, 53 to 60% mo-	contract, lb. con. chrome
carlots	Do, spot 85,00c Briquets, 48
Do., less-ton lots 11.50c Ferro-carbon-titanium, 15-	Do, spot 84.00c contained,
67-72% carloads, 2% car- 18%, ti., 6-8% carb.,	Silicon Metal, 1% iron, ducers' plant

## WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

				Plates	Struc-			Sheets	
	Soft Bars	Bands	Hoops	¼ -in. & Over	tural Shapes	Floor Plates	Hot Rolled	Cold Rolled	Galv. No. 24
	3.98	4.21	5.21	3.85	3.85	5.66	3.86	4.93	4.61
olitan)	3.94	4.11	4.11	3.76	3.75	5.56	3.40	4.60	4.50
	3.60	3.60	4.10	3.40	3.40	5.00	3.40		4.43
	3. <b>\$</b> 0 4.00	3.95 4.15	4.35	3.65 3.85	3.65 3.85	5.00 5.20	<b>3.7</b> 0 3.90	5.05	<b>4.3</b> 0 5.40
	3.60	3.97	3.97	3.77	3.55	5.40	3.50	4.55	4.40
	3.60	3.75	3.75	3.55	3.55	5.15	3,50	4.60	4.50
	3.50	3.65	3.65	3.55	3.73	5.33	3.50	4.70	4.62
	3.43	3.58	3.83	3.75	3.80	5.42	3.58	4.65	4.74
	3.85	3.82	3.82	3.80	3.83	5.43	3.57	4.45	4.57
	3.60 3.85	3.75 4.00	3.75 4.00	3.55 3.80	3,55 3,80	5.15 5.40	3.50 3.75	4,45 5,10	4.50 4.75
	3.73	3.88	3.88	3,68	3.68	5.28	3.63	4.58	4.63
	3.72	3.87	3.87	3.47	3.47	5.07	3.53	4.47	4.53
	4.15	4.30	4.30	4.10	4.10	5.70	4.10	• • • •	4.75
	4.00	4.15	4.15	3.95	3.95	5.71	3.90		5.25
******	3.90 4.64	4.05 4.79	4.05	3.85 4.41	3.85 4.41	5.80 6.01	3.80 4.47		<b>4.4</b> 0 5.47
	3.50	3.65	3.65	3.45	3.45	5.83	3.40	• • • •	4.75
	3.85	4.65	4.65	3.80	3.80	5.75	4.10	••••	4.60
	3.50	5.85	6.25	4.05	4.05	5.65	3.95		5.25
	3.65 - 4.00	3.85 4.40	5.20	3.40	3.50	5.25	3.95	0.50	4.75
	4.00	4,50	6.10 6.35	4.00	4.00 4.00	5.50 6.20	3.95 4.20	6.50 6.30	4.75 4.75
	90.00	4.05	6.00	3.60	3.60	5.20	3.60	6.40	5.15
	Cold	Cold		- SAE Hot-roll	led Bars (	Unannealed) —		SA	E
	Rolled	Finished	1035-	2300	3100	4100	6100	Cold Dra	
	Strip	Bars	1050	Series	Series	Series	Series	2300	3100
	3.61	4.18	4.28	7.65	6.25	6.00	8.05	8.73	7.33
	3.66	4.14	4.14	7.50	6.10	5.85	0.71	8.69	7.29
	3,66	4.11	3.85 3.95	7.46	6.06	5.81	8.71	*** * * * *	
		4.20	3.95	*** *	1010	*** *	/ *** *	*** *	
	3.57								
	0.01	3.80	3.80	7.25	5.85	5.60	7,65	8.25	6.85
	3.35	3.70	3.80	7.35	5.95	5.70	7,65 7.75	8.25 8.35	6.95
	3.35 3.35	3.70 3.80	3.80 3.70	7.35 7.45	5.95 6.05	5,70 6.05	7.65 7.75 7.85	8.25 8.35 8.25	6.95 6.85
	3.35 3.35 3.55	3.70 3.80 3.85	3.80	7.35	5.95	5.70	7,65 7.75	8.25 8.35	6.95
	3.35 3.35	3.70 3.80 3.85 4.05	3.80 3.70 3.58	7.35 7.45 7.57	5.95 6.05 6.17	5.70 6.05 5.92	7.65 7.75 7.85 7.39	8.25 8.35 8.25 8.55	6.95 6.85 7.15
	3.35 3.35 3.55 3.60 3.65	3.70 3.80 3.85	3.80 3.70 3.58 3.90	7.35 7.45 7.57 7.59	5.95 6.05 6.17 6.19	5.70 6.05 5.92 5.94	7.65 7.75 7.85 7.39 8.99	8.25 8.35 8.25 8.55 8.60	6.95 6.85 7.15 7.20
	3.35 3.35 3.55 3.60	3.70 3.80 3.85 4.05 3.80 4.39 3.93	3.80 3.70 3.58 3.90 3.80 4.00 3.93	7.35 7.45 7.57 7.59 7.25 7.60 7.48	5.95 6.05 6.17 6.19 5.85 6.20 6.08	5.70 6.05 5.92 5.94 5.60 8.79 5.83	7.65 7.75 7.85 7.39 8.99 7.65 9.34 7.88	8.25 8.35 8.25 8.55 8.60 8.25 8.94 8.48	6.95 6.85 7.15 7.20 6.85 7.54 7.08
	3.35 3.35 3.55 3.60 3.65	3.70 3.80 3.85 4.05 3.80 4.39 3.93 4.07	3.80 3.70 3.58 3.90 3.80 4.00 3.93 3.92	7.35 7.45 7.57 7.59 7.25 7.60 7.48	5.95 6.05 6.17 6.19 5.85 6.20 6.08 6.22	5.70 6.05 5.92 5.94 5.60 8.79 5.83 5.97	7.65 7.75 7.85 7.39 8.99 7.65 9.34 7.88 8.02	8.25 8.35 8.25 8.55 8.60 8.25 8.94 8.48 8.62	6.95 6.85 7.15 7.20 6.85 7.54 7.08 7.22
	3.35 3.35 3.55 3.60 3.65	3.70 3.80 3.85 4.05 3.80 4.39 3.93 4.07 4.60	3.80 3.70 3.58 3.90 3.80 4.00 3.93 3.92	7.35 7.45 7.57 7.59 7.25 7.60 7.48 7.62	5.95 6.05 6.17 6.19 5.85 6.20 6.08	5.70 6.05 5.92 5.94 5.60 8.79 5.83 5.97	7.65 7.75 7.85 7.39 8.99 7.65 9.34 7.88 8.02	8.25 8.35 8.25 8.55 8.60 8.25 8.94 8.48 8.62	6.95 6.85 7.15 7.20 6.85 7.54 7.08 7.22
	3.35 3.35 3.55 3.60 3.65	3.70 3.80 3.85 4.05 3.80 4.39 3.93 4.07 4.60	3.80 3.70 3.58 3.90 3.80 4.00 3.93 3.92	7.35 7.45 7.57 7.59 7.25 7.60 7.48 7.62	5.95 6.05 6.17 6.19 5.85 6.20 6.08 6.22	5.70 6.05 5.92 5.94 5.60 8.79 5.83 5.97	7.65 7.75 7.85 7.39 8.99 7.65 9.34 7.88 8.02	8.25 8.35 8.25 8.55 8.60 8.25 8.94 8.48 8.62	6.95 6.85 7.15 7.20 6.85 7.54 7.08 7.22
	3.35 3.35 3.55 3.60 3.65 3.76 4.46	3.70 3.80 3.85 4.05 3.80 4.39 3.93 4.07 4.60 4.36 4.44	3.80 3.70 3.58 3.90 3.80 4.00 3.93 3.92	7.35 7.45 7.57 7.59 7.25 7.60 7.48 7.62	5.95 6.05 6.17 6.19 5.85 6.20 6.08 6.22	5.70 6.05 5.92 5.94 5.60 8.79 5.83 5.97	7.65 7.75 7.85 7.39 8.99 7.65 9.34 7.88 8.02	8.25 8.35 8.25 8.55 8.60 8.25 8.94 8.48 8.62	6.95 6.85 7.15 7.20 6.85 7.54 7.08 7.22
	3.35 3.35 3.55 3.60 3.65	3.70 3.80 3.85 4.05 3.80 4.39 3.93 4.07 4.60	3.80 3.70 3.58 3.90 3.80 4.00 3.93 3.92	7.85 7.45 7.57 7.59 7.25 7.60 7.48 7.62	5.95 6.05 6.17 6.19 5.85 6.20 6.08 6.22	5,70 6.05 5.92 5.94 5.60 8.79 5.83 5.97	7.65 7.75 7.85 7.39 8.99 7.65 9.34 7.88 8.02	8.25 8.35 8.25 8.55 8.60 8.25 8.94 8.48 8.62	6.95 6.85 7.15 7.20 6.85 7.54 7.08 7.22
	3.35 3.35 3.55 3.60 3.65 3.76 4.46	3.70 3.80 3.85 4.05 3.80 4.39 3.93 4.07 4.60 4.36 4.44 4.84	3.80 3.70 3.58 3.90 3.80 4.00 3.93 3.92	7.85 7.45 7.57 7.59 7.25 7.60 7.48 7.62	5.95 6.05 6.17 6.19 5.85 6.20 6.08 6.22	5,70 6,05 5,92 5,94 5,60 8,79 5,83 5,97	7.65 7.75 7.85 7.39 8.99 7.65 9.34 7.88 8.02	8.25 8.35 8.25 8.55 8.60 8.25 8.94 8.48 8.62	6.95 6.85 7.15 7.20 6.85 7.54 7.08 7.22
	3.35 3.35 3.55 3.60 3.65 3.76 4.46	3.70 3.80 3.85 4.05 3.80 4.39 4.07 4.60 4.36 4.44 4.48	3.80 3.70 3.58 3.90 3.80 4.00 3.93 3.92	7.35 7.45 7.57 7.59 7.25 7.60 7.48 7.62	5.95 6.05 6.17 6.19 5.85 6.20 6.08 6.22	5.70 6.05 5.92 5.94 5.60 8.79 5.83 5.97	7.65 7.75 7.85 7.39 8.99 7.65 9.34 7.88 8.02	8.25 8.35 8.25 8.55 8.60 8.25 8.94 8.48 8.62	6.95 6.85 7.15 7.20 6.85 7.54 7.08 7.22
	3.35 3.35 3.55 3.60 3.65 3.76 4.46	3.70 3.80 3.85 4.05 3.80 4.39 4.07 4.60 4.36 4.44 4.84 4.48 5.10	3.80 3.70 3.58 3.90 3.80 4.00 3.93 3.92	7.35 7.45 7.57 7.59 7.25 7.60 7.48 7.62	5.95 6.05 6.17 6.19 5.85 6.20 6.08 6.22  7.80 8.00	5.70 6.05 5.92 5.94 5.60 8.79 5.83 5.97 	7.65 7.75 7.85 7.39 8.99 7.65 9.34 7.88 8.02	8.25 8.35 8.25 8.55 8.60 8.25 8.94 8.48 8.62	6.95 6.85 7.15 7.20 6.85 7.54 7.08 7.22
	3.35 3.35 3.55 3.60 3.65  3.76 4.46	3.70 3.80 3.85 4.05 3.80 4.39 3.93 4.07 4.60 4.36 4.44 4.84 5.10 5.60 5.60 6.60	3.80 3.70 3.58 3.90 3.80 4.00 3.93 3.92  5.65 6.10 4.65	7.85 7.45 7.57 7.59 7.25 7.60 7.48 7.62	5.95 6.05 6.17 6.19 5.85 6.20 6.08 6.22  7.80 8.00 8.55	5,70 6.05 5.92 5.94 5.60 8.79 5.83 5.97  7.65 7.85 8.40	7.65 7.75 7.85 7.39 8.99 7.65 9.34 7.88 8.02  8.45 8.70 9.05	8.25 8.35 8.25 8.55 8.60 8.25 8.94 8.48 8.62	6.95 6.85 7.15 7.20 6.85 7.54 7.08 7.22
imum qua	3.35 3.35 3.55 3.60 3.65  3.76 4.46	3.70 3.80 3.85 4.05 3.80 4.39 3.93 4.07 4.60 4.36 4.44 4.84 5.10 5.60 5.60	3.80 3.70 3.58 3.90 3.80 4.00 3.93 3.92	7.35 7.45 7.57 7.59 7.25 7.60 7.48 7.62	5.95 6.05 6.17 6.19 5.85 6.20 6.08 6.22  7.80 8.00	5.70 6.05 5.92 5.94 5.60 8.79 5.83 5.97 	7.65 7.75 7.85 7.39 8.99 7.65 9.34 7.88 8.02	8.25 8.35 8.25 8.55 8.60 8.25 8.94 8.48 8.62	6.95 6.85 7.15 7.20 6.85 7.54 7.08 7.22

## URRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, May 11

f. o. b. Port of Dispatch-By Cable or Radio

Domestic Prices at Works or Furnace— Last Reported

U. K. ports	North gre Quoted in	tal Channe or Sea ports, oss tons **Quoted in gold pounds sterling £ s d
\$23.40 5 0 26.91 5 15		2 2 0 1 19 0
\$34.52 7 7 53.24 11 7	6 \$38.34 6 42.60	4 10 0 5 0 0
2 30c 11 0 2.09c 10 0	0 \$48.99 0 1.90c to 1.95c 0 1.81c to 1.85c 9 2.09c to 2.33c	5 0 0 to 5 2 6 4 15 0 to 4 17 6
3.29c 15 15 2.77c 13 5 4.08c 19 10	0 2.95c 0 3.52c 0 1.95c to 2.00c 0 2.33c to 2.76c 0 2.99c to 3.09c 2.66c to 2.85c	6 26 to 7 50
se \$80.00 delivered	d Atlantic seaboar	d duty-paid.

		£	в ф			French Francs		Belgian Francs		Reich Mark
Fdy. pig iron, Si 2.5	\$23.17	4	19	0(a)	\$16.44	620.50	\$17.00	500	\$25.28	63
Basic bess. pig iron	21,65	4	12	6(a)					27.89 (b	) 69. 50
Furnace coke	5.38	1	4	2	5 96	225	6.87	202	7 62	19
Billets	34.52	7	7	6	25.04	945	29.24	860	38.73	96.50
Standard rails	1.99c	9	10	0	1.56c	1,300	2.06c	1,375	2.38c	132
Merchant bars	2.42c	11	12	011	1.44c	1,202	1.65c	1,100	1.98c	110
Structural shapes	2.17c	10	8	0††	1.41c	1,173	1.65c	1,100	1.93c	107
Plates, †¼-in. or 5	2.29c	10	19	3††	1.82c	1,515	· 2.06c	1,375	2.29c	127
Sheets, black	3.08c	14	15	0 §	2.17c	. 1,805‡	2.36c	1,575‡	2.59c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	3.61c					2,750	4.13c	2,750	6.66c	370
Plain wire	4.08c					1,450	2.48c	1,650	3.11c	173
Bands and strips	2.58c	12	7	011	1.61c	1,340	1.95c	1,300		127
			0		. 1 1	1 .	204	41 . 2		

\*Basic. †British ship-plates. Continental, bridge plates. \$24 ga. \$1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlesbrough. Ss rebate to approved customers. (b) hematite. \*Close annealed. †Rebate of 15s on certain conditions. \*\*Gold pound sterling carries a premium of 75 per cent over paper sterling.

# IRON AND STEEL SCRAP PRICE

Corrected to Friday n	ight. G	Prosstons delivered to consum	ners,except where otherwise stated,	tindicates broi
HEAVY MELTING STEEL		Detroit 4.50- 5.00		
Birmingham, No. 1.	†12.00	Eastern Pa 8.50- 9.0		
Bos. dock No. 1 exp. 13.75		Los Angeles 4.50- 5.0	0 Seattle 16.00	
New Eng. del. No. 1	14.00	New York †3.50- 4.0	0	0.4.7
Buffalo, No. 1, R. R. 13.75		Pittsburgh 8.50- 9.0		CAR WHEELS
Buffalo, No. 1 13.00- Buffalo, No. 2 11.00-	-13.50 -11.50	St. Louis		Birmingham
Chicago, No. 1 12.50	-13.00	Valleys 8.50- 9.0		Boston dist., Buffalo, steel
Chicago auto, no			ARCH BARS, TRANSOMS	Chicago, iron
alloy 11.00	-11.50	SHOVELING TURNINGS	St. Louis 13.50-14.00	Chicago, roller
Chicago, No. 2 auto 10.00	-10.50	Buffalo 7.50- 8.0		Cincin., iron, c
Cincinnati, dealers . 10.50	-11.00	Cleveland 7.50- 8.0 Chicago 7.50- 8.0	0	Eastern Pa., i
Cleveland, No. 1 13.00- Cleveland, No. 2 12.00-	-13.50	Detroit 5.50- 6.0	1.00- 0.00	Eastern Pa.
Detroit No. 1 9.50	-10.00	Pitts., alloy-free 10.00-10.5		Pittsburgh, ire Pittsburgh, st
Detroit, No. 2 8.50	- 9.00	BORINGS AND TURNINGS	RAILROAD GRATE BARS	St. Louis, iron
Eastern Pa., No. 1 15.00-	-15.50	For Blast Furnace Use	Buffalo 10.00-10.50	St. Louis, iron
Eastern Pa., No. 2 12.50-	-13.00	Boston district 2.0	Chicago net 750 900	
Federal, Ill 11.00- Granite City, R. R. 11.50-	-11.50	Buffalo 7.50- 8.00	Cincinnati, dealers. 5.75-6.25	NO. 1 CAST S
Granite City, R. R. 11.50- Granite City, No. 2. 10.50-	-12.00	Cincinnati, dealers 2.75- 3.2	5 Eastern Pa 12,50-13,00	Birmingham
Los Angeles, No. 1. 12.50-	-13.50	Cleveland 7.50- 8.00		N. Eng. del. N
Los Angeles, No. 2 11.00-		Eastern Pa 6.50- 7.00		N. Eng. del. te
N. Y. dock No. 1 exp. 12.00-	12.50	New York		Buffalo, cupola
Pitts., No. 1 (R. R.) 16.00-		Pittsburgh 8.25- 8.75	5 Birmingnam 711.00-11.50	Buffalo, mach.
Pittsburgh, No. 1. 14.50		Toronto, dealers 5.25- 5.7	Boston district +9.50-10.00	Chicago, agri.
Pittsburgh, No. 2 13.50-	-12.50	AXLE TURNINGS	Eastern Pa., No. 1. 16.00-16.50	Chicago, auto Chicago, railros
St. Louis, R. R 12.00- St. Louis, No. 2 10.50-	-11.00	D 1 11 1 1 1 1 1	St. Louis, No. 1 9.75-10.25 St. Louis, No. 2 11.50-12.00	Chicago, mach.
San Francisco, No. 1 13.00-	-13.50			Cincin., mach.
Seattle, No. 1 11.00-	-12.00	Buffalo 9.50-10.00 Chicago, elec. fur 12.50-13.00	FORGE FLASHINGS	Cleveland, mad
Seattle, No. 1 11.00- Toronto, dlrs. No. 1 . 9.75-	-10.25	East. Pa., elec. fur 13.00-13.50		Eastern Pa., cu
Valleys, No. 1 14.00-	-14.50	St. Louis 9.00- 9.50		E. Pa., mixed
COMPRESSED SHEETS		Toronto 4.50- 4.75		Los Angeles, n
Buffalo 11.50-	12.00	CAST IRON BORINGS	Detroit	Pittsburgh, cup San Francisco
Chicago, factory 11.75- Chicago, dealer 10.75-	.11 25	Birmingham †6.00- 6.50	los Angeles 9.00 Pittsburgh 13.50-14.00	Seattle
Cincinnati dealers. 10.00-	10.50	Boston dist. chem †4.50	)	St. Louis, cupola
Cleveland 12.25-	12.75	Buffalo 7.50- 8.00		St. Louis, agri. r
Detroit 10.25-	10.75	Cincinneti dealers 2.75 2.05	Social diberret	St. L., No. 1 ma
E. Pa., new mat 15.00-	15.50	Cincinnati, dealers. 2.75- 3.25 Cleveland 7.50- 8.00	Chicago, neavy 15.50-16.00	Toronto, No. 1,
E. Pa., old mat 11.00-		Detroit 5.00- 5.50		mach., net.
Los Angeles 12.50- Pittsburgh 14.50-	10.00	E. Pa., chemical 10.00-11.00		HEAVY CAST
St. Louis 9.50-	-10.00	New York †3.50- 4.00	Cleveland, crops 17.50-18.00	Boston dist, bre
Valleys 13.50-	-14.00	St. Louis 2.50- 3.00		New England, 6
BUNDLED SHEETS		Toronto, dealers 4.25- 4.75		Buffalo, break.
Buffalo, No. 1 11.00-	11.50	RAILROAD SPECIALTIES	slab crops 18.50-19.00	Cleveland, break
Buffalo, No. 2 10.00-	10.50	Chicago 14.50-15.00	LOW PHOS. PUNCHINGS	Detroit, auto ne Detroit, break
Cleveland 9.50-		ANGLE BARS—STEEL	Buffalo 15.50-16.00	Eastern Pa.
Los Angeles Pittsburgh 13.50-	14.00	Chicago 15.00-15.50	Chicago 15.50-16.00 Eastern Pa., crops 17.50-18.00	Los Ang., auto,
St. Louis 7.00-	7.50	St. Louis 13.00-13.50		New York, bre.
Toronto, dealers	8 25	SPRINGS	Seattle	Pittsburgh, brea
SHEET CLIPPINGS, LOOS			RAILS FOR ROLLING	STOVE PLATE
Chicago 8.00-		Buffalo 16.00-16.50 Chicago, coil 15.50-16.00	,	Birmingham
Cincinnati, dealers. 6.00-		Chicago, leaf 14.50-15.00	0 7000 0000	Boston district
Detroit 7.00-		Eastern Pa 17.00-17.50	Diffillingham 14.00-15.00	Buffalo
†Los Angeles 3.75-	4.00	Pittsburgh 17.50-18.00	Chicago 17.00-17.50	Cincippati deals
St. Louis 6.00-	6.50	St. Louis 14.00-14.50	New York†14.00-14.50	Cincinnati, dealer Detroit, net
BUSHELING		STEEL RAILS, SHORT	Eastern Pa 17.00-17.50	Eastern Pa
Buffalo, No. 1 11.00- Chicago, No. 1 11.25-	11.50	Birmingham †12.00-12.50		New York, fdy.
		Buffalo 17.00-17.50		St. Louis
Cincin., No. 1, deal. 7.00- Cincinnati, No. 2 1.75-		Chicago (3 ft.) 15.50-16.00 Chicago (2 ft.) 16.00-16.50	Diffiningnam (15,00-16,00)	Toronto dealers,
Cleveland, No. 2 7.50-		Cincinnati, dealers. 16.25-16.75	Buffalo 16.00-16.50	MALLEABLE
Detroit, No. 1, new. 9.50-1	10.00	Detroit 16.00-16.50		Birmingham, R. F
Valleys, new, No. 1. 13.25-	13.75	Los Angeles . 15.00-15.50	Eastern Pa 20.50-21.00	New England, del
Toronto, dealers 4.25-		Pitts., 3 ft. and less 18.00-18.50	St Louis 1700-1750	Buffalo Chicago, R. R.
MACHINE TURNINGS (Lo.	ng)	St. Louis, 2 ft. & less 16.25-16.75		Cincin., agri., deal
Birmingham †4.50-		STEEL RAILS, SCRAP	Chicago (cut) 15.00-15.50	Cleveland, rail
Buffalo 6.50-	PW 00	Boston district †13.50-14.00	St. Louis, No. 1 12.25-12.75	Eastern Pa., R. R.
Chicago 6.50- Cincinnati, dealers 4.00-		Buffalo 16.00-16.50 Chicago 13.00-13.50		Los Angeles
Cleveland 7.00-		Cleveland 16.00-16.50	SHAFTING Boston district †15.25-15.75	Pittsburgh, rail St. Louis, R. R.
		10.00-10.00	20.10	
Inon One		Eastern Local Ore	No. Afr. low phos 12.00	molybdenum co
Iron Ore		Cents, unit, del. E. Pa.	Swedish low phos 12.00	tained, f.o.b.
	1	Foundry and basic /		
Lake Superior Ore		56.63% con 9.00-9.25	Spanish No. Africa basic, 50 to 60%	Manganese
Conner day 8737	(	Copfree low phos.	nom 9.00- 9.50	
Gross ton, 514%		58-60% nominal	Tungsten. sh. ton.	Prices not includi
Lower Lake Ports		Foreign Ore	unit, duty pd. nom. 19.00-19.50	per unit ca
Old range bessemer §	\$5.25	Cents per unit, c.i.f. Atlantic	N. F., fdy., 55% 7.00	Caucasian, 50-52

12.00

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom. N. F., fdy., 55%... 7.00
Chrome ore, 48%
gross ton, c.i.f....\$23.00-24.00
Molybdenum ores
sulphide, per lb.

Caucasian, 50-52

nom.
So. African, 50-52'
nom.
Indian, 49-50%

Old range bessemer \$5.25 Mesabi nonbessemer 4.95 High phosphorus 4.85 Mesabi bessemer 5.10 Old range nonbessemer 5.10

# Strip

Prices, Pages 94, 95

eakness in hot and and strip prices has ranging up to \$8 larger concessions denied. Only small en placed, demand by the fact automonot quite ready to 1940 models. Howst fall's cuts were ly may induce an. . Sheet mill operaged around 50 per hot and cold strip at 30. Galvanized down 2 points to

leakness in sheet it has spread to cold-rolled strip, naving privately noomers that conceston are available. ving to hold to curmay be forced inile, there has been in volume reaching it is expected that y drive in some ad-

Recent price concesand strip, generally e spread from the where they have nmon for several areas. Reductions oth hot and cold-Automotive demand vely light, pending avier buying shortels. Business is report from miscelgenerally in small

ng is light and bea month ago. Auis counted on to upturn to business, of such business is

dume of incoming ge is generally uncurrent curtailed small individually, ery, but fairly well sumption by some nsuming industries e automotive, which l producers. Finishn few instances are per cent with mill

Automobile buying rices, but buyers inns of \$4 a ton are prices are being the usual run of out it is indicated are not rigidly held. Makers of small stampings still are fairly busy. Stove manufacturing is slower.

St. Louis-Sheet and strip production is steady, with demand well sustained. Business from miscellaneous users is outstanding. Movement of galvanized sheets to rural areas for repair work has been held back by adverse weather, particularly in the South.

Birmingham, Ala.-A marked letdown in demand for sheets, both roofing and manufacturers', is noted

in the South. However, sheets are the leading product of the district from a volume standpoint, with output around 75 per cent. Some increase is reported in strip production, mostly cotton ties.

Baltimore—Reports of sharp price concessions at Detroit have retarded sheet business here the past few days, pending clarification of prices. Hot and cold sheets and strip are off about \$4 a ton. Outstanding is an inquiry for 700 tons of sheets, 65 per cent cold-rolled and 35 per cent

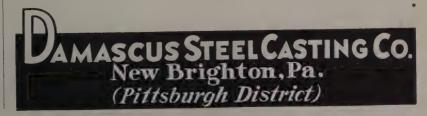


# . . SERVICE

..QUALITY

# **DAMASCUS MANGANESE AND ALLOY CASTINGS**

Manganese and Alloy Steel Castings One Half to One Thousand Pounds Produced in our modernly equipped foundry from electric furnace steel and heat-treated in automatically controlled gas-fired furnaces.



hot-rolled mostly 16 gage, for school bus bodies for state of North Carolina, which took bids May 9 on fabrication work.

# **Plates**

Plate Prices, Page 94

New York—An unsettled price situation, particularly pronounced recently as a result of concessions in sheets, has restricted plate business here further. Despite the

stimulating influences of the breaking of the coal deadlock and the quieter European situation, buyers generally are holding up purchases until prices are clarified. Delivered prices here range from 2.19c to 2.29c.

Boston—Demand from miscellaneous consumers has sagged, boiler and structural shops and railroads taking little tonnage. Shipyard releases are steady but not widely distributed in this district except to navy yards. Tank work is light. There is some price shading on the limited volume of business. Large diam-

eter pipe needs ar

Philadelphia—M. business is definite ing sufficient to tions of several disface of poor releasers and railroads. of ship plates still 3500 tons will be disto eastern mills for Bids opened May much as \$4.40 a tor quotations. Norwaket for 4000 tons of Holland is a prospe

Birmingham, Alaplate buying is raino large bookings aness, source of a of plate demand is a this season and sh still are awaited.

Seattle — Plate although local show volume of small or tant projects are Reclamation office, I tenders May 25 fe valves and appurter Coulee pumping planding Co. has been stated tonnage of for flood control g dam.

San Francisco plate inquiry calls tons for a 250,000 c tank for Hillsborou on which have jus Other inquiries and in lots of less than far this year 16,330 placed, compared w for the corresponding

Raltimore—Except quirements, plate de gish. Plate prices weaken, with the goi about \$2 a ton und quotation of 2.1425c

#### Plate Contracts F

310 tons, eight tanks, S Cincinnati, to Chicago Co., Chicago.

135 tons, sewage plant, P Chicago Bridge & Iron

#### Plate Contracts

Unstated tonnage, 300,000 water tank; bids to Fo June 1.

Unstated tonnage, 125-te for United States engl bids asked.

#### Ferroalloys

Ferroalloy Prices,

New York—Shipme manganese and spie tinue to taper in I lower steelmaking op



# STEEL CASTINGS

Standard castings are produced—from furnace charge to finished product—under the direct supervision of Standard's engineers. Each operation is in the hands of experienced workmen, most of whom have spent their lives at Standard.

This centralized control is in large measure responsible for the high quality of Standard products.



to continue downder of this quareading ferroalloys

s, Page 94

nges in volume are recent downward een arrested and shown in some diare fairly numerally are light. Betppeared from some and road machinittle new business as yet for 1940 is. Bar prices are

hant bar demand. Automotive buydull although some expected before the edustrial and farm in is a leading fac-

nercial bar buying nand being in small delivery. Jobbers stocks in balance. The notably dull, alorders of alloys are ined. Forging bars ops engaged in supane and ship buildere making the best and nut specialties producers are conterial.

he trend in demand ward, though specishipyards, plane vernment shops are road buying is viry the result of the prices are steady. Makers of small lying steadily. Coness also is coming ge shops which are stly on government nafts for ships. Buylipment builders has ing because of the ough a mild revival ne past few days. A of welded chain is per cent.

Ala. Demand for ed off but showed at the past week to y. Some business, I lots, has material-reinforcing bars, but manufacturers of plements have been

insion in "demand ural industry is holdion steady. Releases from consumers of lighter steel products are holding fairly well. Inquiries from motor and railroad sources continue to lag. Concrete reinforcing bar producers are maintaining the best operating schedules.

Baltimore—Special alloy specifications from airplane and precision instrument manufacturers and assorted requirements of shipyards are outstanding in a rather quiet bar market. However, bar prices, in contrast with a general easy situation in some steel products, are firm.

# Pipe

Pipe Prices, Page 95

Pittsburgh — Standard pipe continues most active of tubular products, total demand for which is unchanged. Oil country goods continue slow, being retarded by inactivity in drilling and laying of line pipe. Mill prices are unchanged but weakness prevails in resale markets.

Cleveland-Pipe business is fair-



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ball bearing rollers that move freely in rigid, continuous-angle mounted tracks . . . and is accurately counterbalanced with a torsion spring. It saves space, raises over snow, ice and swollen ground, and when open, remains out of the way, out of reach of damage.

**DEPENDABLE!** Kinnear All-Steel RoL-TOP Doors are constructed to the same high standards to which Kinnear has adhered throughout more than forty years of door specialization. Also, they're custom built for exact fit and easy, economical installation in any doorway. They can be equipped for motor operation, and arranged for any number of light sections. Write today.

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Offices and Agents in All Principal Cities - Factories: Columbus, Ohio; San Francisco, California

ly steady, volume having shown only moderate variation the past four to six weeks. Standard pipe is moving relatively well and is more active than oil country goods. However, casing demand holds somewhat above its recent low level. Mechanical tubing reflects curtailment in automotive operations. Cast pipe production is fairly steady.

**Boston**—Cast pipe inquiry and buying is well maintained with only a slight slackening as the season for laying water mains advances. Purchases totaling 1025 tons have been made by New London, Conn.,

Providence, R. I., and Hamilton, Mass. Steel pipe demand has eased off slightly, coverage having been made on a considerable volume for construction needs which have reached a stage where plumbing and heating material is needed by subcontractors. This has been mostly for public work which developed during the flurry late last year. To a certain degree this also applies to wrought pipe.

Birmingham, Ala.—Pipe demand is holding exceptionally well, although there is no outstanding tonnage, either from government or private sources. ness has materializ Florida sources the Operations are fail 60 per cent.

San Francisco
awards were the
three months and
tons, bringing the
10,058 tons, comp
tons for the corr
in 1939. United St
dry Co. booked 42
Beach, Calif., 318 t
Calif., and 265 ton
Prescott, Ariz., pla
the Gold Water da
Pacific States Ca
and San Bernardin
160 tons of 4 to 12
Wood & Co. and 11
Cast Iron Pipe Co

Baltimore—Steel flects brisk resider and expanding si with tonnage general year ago. Consutric Light & Power take sizable quant and standard pipe expansion program the Alexandria Gandria, Va., has jon approximately inch pipe.

#### Cast Pipe Place

426 tons, 4 and 6-inch, to United States Pi Burlington, N. J.

400 tons, Gold Wate Prescott, Ariz., to Iron Pipe Co., Prev

395 tons, 30-inch and R. I., to Warren Fou Everett, Mass.

318 tons, 12 and 20-inc dale, Calif., to Unit Foundry Co., Burlin 275 tons, 4 to 12-inch Calif.; R. D. Wood 160 tons, and Natice

Co., Birmingham A 265 tons, 4 and 6-inc. United States Pipe & lington, N. J.

200 tons, 8 to 12-inch, to unnamed interest 125 tons, 6 and 8-ir Wash., to unnamed 100 tons, South Gate, can Cast Iron Pipe Ala.

## Cast Pipe Pend

700 tons, 12-inch, Los tion 3010; bids opene 600 tons, Garfield stree tle; bids soon.

325 tons, 2 to 8-inch Eugene, Oreg.; bids in 240 tons, 6-inch, for Spo May 18.

190 tons, treasury del tion 7461, San Franc on cast iron or cement 184 tons, 6-inch, Spok-May 18.



Pis, Page 95

and shows further rections, and May to be better than pared with April. ire business from a rs is fairly steady, of automotive buying factor. Mereslightly less ac-

and for wire and uncaneous consumers important factor, ural equipment intain a fairly condition of the possibility of urn in wire orders itil automotive inlaying on a larger

mill finishing opinstances are better at, or about in line dction. A few specactive, but there improvement and t substantial back-· coming from mismers, although conrs lower among er users, especially rade, which has not s for 1940 models. ant wire products listributors having n the year at lower local wave of price

he producer reports products slightly nonth ago, but this trend. Wire rope on electrical wire st one producer becarket for business

rchant wire prodfairly well, espeind nails; stapling ood demand. Busiturers wire is spotwire, tonnage has Prices have been

/, except for nails ire, and nail prices med somewhat.

Prices, Page 94

luction is steady at a some increase not Canmakers' stocks large for this sea-oducers' stocks are verage in some incre close to producints are expected to

exceed output the next 60 days. Fruit crops apparently will be at least normal and result in a good pack, despite earlier reports of frost damage.

# Rails, Cars

Track Material Prices, Page 95

While releases against contracts for rails and miscellaneous steel continue to be filed there is little buying. Present rail orders will give a fair rate of rolling for several weeks. Great Northern rails, 10,000 tons, placed recently, are understood to have been divided between Bethlehem Steel Co., Inland Steel Co. and another maker. Another order of the same size may be placed later by the same road.

Atchison, Topeka & Santa Fe is inquiring for 11 light-weight passenger cars. Lehigh Valley has placed three locomotive tenders with American Locomotive Co.

#### Locomotives Placed

Lehigh Valley, three 20,000-gallon loco-



# We've proved its value!



Other statements to the contrary, the full-roller type of bearing is not new. American Full-Roller Bearings have long proved successful. The simplicity, the precision, the additional strength of this design have been tested and approved in a number of severe applications. Perhaps this is the type of installation you need.

American Roller Bearing Company Pittsburgh, Pa.

Pacific Coast Office:

321 W. Pico St., Los Angeles

AMERICAN
Heavy-Duty ROLLER BEARINGS

motive tenders, to American Locomotive Co., New York.

#### Car Orders Placed

Boston Elevated Railways, Boston, five trackless trolleys, to Pullman-Standard Car Mfg. Co., Chicago.

#### Car Orders Pending

Atchison, Topeka & Santa Fe, 11 lightweight passenger cars; bids asked.

#### Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 95
Bolt and nut makers look for

automotive interests to start specifying against 1940 model requirements before the end of May. Some improvement in demand from railroads is expected to follow settlement of the coal dispute, since a number of shops have been down or on curtailed schedules because of the mine tieup.

#### Fluorspar

Fluorspar Prices, Page 96

Some fluorspar producers are quoting prices \$1 a ton above re-

cently prevailing the market for has been \$17, II mines, per net than \$18 for ballump has been is being taken a ever, resulting tations on both slow.

# Shape

Structural Shap

Pittsburgh — § remain most act a large portion o is a reassuring projects. Tonnage mains about cons

Cleveland — O went to Carn-Corp., 1200 tons, hoga river straigh contract 7, Cl Great Lakes Dre Cleveland. The slow on another se piling. A number way bridge jobs lin, Summit and involving over 100 come up for bids days. Prices are lar.

Chicago—Struct changed, with detained. Numerous projects have appinquiries of 100 toling no decrease.

Boston—Inquirie small tonnages for is closing, May 18 tons of I-beam spechusetts has sever bridges on which Awards include 3 Albany street Placements total 70 ing construction fabricating shops logs.

New York-Inqu sagging, as reflected fewer contracts. work and the fa building to take up dent. Most eastern making substantial logs built up early though a large ton be fabricated and s the period just ahea ments will probably ing tonnage. There bridges up for bid standing tonnages New York area. continue erratic.

Philadelphia — Ha



New and improved machinery and equipment are the distinguishing characteristics of industrial leadership. The owners of modernized plants are able to keep down costs, increase production, improve their product and maintain a commanding position in their trade.

It will pay you to investigate STEARNS better engineered, modern and improved magnetic separating equipment, STEARNS power transmission control devices, magnetic clutches, brakes and clutchbrake combinations. They will help provide the dollars for dividends.

THE OLD

VIC

THE NEW



Obsolete magnetic separators of this kind are rapidly being replaced by newer, improved types developed by Stearns engineering from forty years of research and design on magnetic equipment.



This latest improved Stearns High Duty Magnetic Separator permits treatment of bronze powder, metallic copper and similar materials for removal or reclamation of fine iron. Simple compact design, multiple magnetic zones to suit application, maximum magnetic strength, lower power input, a definitely profitable investment.



650 So. 28th Street

WRITE FOR OUR INTERESTING BULLETIN
THE HOUSE OF MAGNETIC MAGIC

Milwaukee, Wis.

#### -The Market Week-

yek, is low on the blige, Ludlow Fer-12,000 tons, and Bethlehem, Pa., Ms for the Susqueire project, Havre

Pres continue weak. wh continues to extonnage underlendar is the best Talk of collusion to a rebidding on ont ct for the new \$2,hall, here. Genr the Kleinhans to M. Shapiro & 11 Co. Inc., New Inda Steel Co., Bethoded 350 tons for a

is and other public g en larger plants a table contracts are eln. Bids are in for ge, Seattle. Acme st Coast Construct Co., Seattle, were \$669,998.

id)—Awards are of ; with 1818 tons g total to date to apared with 44,474 Bethlehem Steel Co. is for the Hoover library, Stanford Alto, Calif. Bids to on 425 tons for a eneral Foods, San n 267 tons of sheet the United States Los Angeles.

acing of 14,500 tons hem Steel Co., Beththe Susquehanna ructure last week, ning of bids on an as large tonnage for ver bridge, far over-ner developments in actural market.

#### racts Placed

rstructure, bridge over iver, Havre de Grace, hem Steel Co., Bethle-

tural supports, inner

#### rds Compared

Tons
. 34,765
. 9,315
. 20,638
. 14,576
8 21,566
. 24,408
. 24,531
. 311,245
: 439,347
or more.

liners and miscellaneous material, contract 319, Delaware aqueduct, New York, to Carnegie-Ililnois Steel Corp., Pittsburgh; through Dravo Corp., Pitts-

2050 tons, Wilmot street bridge, Pitts-burgh, to Fort Pitt Bridge Works, Pittsburgh.

00 tons, pfling, Cuyahoga river straightening project, Cut No. 6A, con-tract 7, to Carnegie-Illinois Steel Corp., Pittsburgh; through Great Lakes Dredge & Dock Co., Cleveland.

1100 tons, music hall building, for University of Indiana, Bloomington, Ind., to R. C. Mahon Co., Detroit.

825 tons, buildings 1 and 2, social se-

curity and railroad retirement boards, Washington, to Bethlehem Steel Co., Bethlehem, Pa.

760 tons, extension to power plant, Mishawaka, Ind., for Indiana & Michigan Electric Co., to Edwards Iron Works Inc., South Bend, Ind.

750 tons, Hoover War Memorial library, Stanford University, Palo Alto, Calif., to Bethlehem Steel Co., San Francisco.

510 tons, Cross Island parkway bridge, contract Mc-39-11, to Harris Structural Steel Co., New York; through Poirier & McLane Corp., New York.

510 tons, school, East Greenbush, N. Y., to Utica Structural Steel Co., Utica, N. Y.

500 tons, Cross Island parkway grade

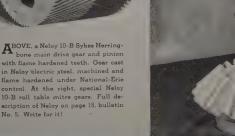




# TO Your SPECIFICATIONS

WITHIN one plant . . . under one management VV ... with one responsibility, are produced steel castings ... rough, finished, heat treated as specified . . . Diversified, industrial Neloy gears for highly specialized applications . . . Complete assemblies of gears and housings . . . That is the day's routine here at National-Erie Corporation . . . Complete facilities are available for your specific requirements . . To prove it, simply ask for bulletin No. 5 on your regular letterhead . . . no obligation whatever . . . Your orders will be handled promptly and

efficiently



No. 5. Write for it!

NATIONAL-ERIE (E) CORPORATION

#### -The Market Week-

separation, Thirty-ninth - Forty-sixth avenues, Queens, New York, for city, to Harris Structural Steel Co., New York.

425 tons, three bridges, Bingham and Windsor, Conn., to American Bridge Co., Pittsburgh; bids direct.

400 tons, intercepting sewer, Cleveland, to R. C. Mahon Co., Detroit; through Lombardo Bros. Co., Cleveland.

400 tons, ward building No. 2, Gallinger hospital, Washington, for District of Columbia, to Fort Pitt Bridge Works, Pittsburgh.

390 tons, bridge sec. 2VF, McLean county, Bloomington, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

355 tons, building, United States To-

bacco Co., Richmond, Va., to Virginia Bridge Co., Roanoke.

350 tons, school, Clyde, N. Y., to Bethlehem Steel Co., Buffalo.

325 tons, Albany street bridge, Boston, to American Bridge Co., Pittsburgh.

300 tons, boilerhouse, Niagara, Wis., to Lakeside Bridge & Steel Co., Milwaukee.

290 tons, H-piling, Rock creek diversion sewer, Washington, to Bethlehem Steel Co., Bethlehem, Pa.; through Joseph Lombardy, Philadelphia.

265 tons, Central school building, Almond, N. Y., for board of education, to American Bridge Co., Pittsburgh.

250 tons, bridge 314, Winnebago county,

Wisconsin, to Wisc Iron Co., Milwaukee

235 tons, highway brid; Clinton Bridge Works

225 tons, school, North Haarmann Steel Co. through M. J. Walsh Mass.

220 tons, high school Va., to Richmond Sta Richmond, Va.

215 tons, Seagram's d Lawrenceburg, Ind., Steel Co., Evansville

210 tons, building, Ry Los Angeles, to Nati San Diego, Calif.

210 tons, bridge sec. 46 ty, Mundelein, Il., t Iron Works, Chicago

200 tons, service build tion system, Beltsvi partment of agricul Iron Works, Eddyste

195 tons, 2-story b street and Broadwa Dreier Structural Ste

190 tons, service buil of agriculture, Beltsmont Iron Works, Ed

180 tons, distillery by interests, Lawrencest ternational Steel Co160 tons, bridge sec.

county, Rock Falls, Bridge Works, Pitts

160 tons, state highway Vt., to Bethlehem hem, Pa.150 tons, state bridge, to Wisconsin Bridge

waukee.

145 tons, high school, to Belmont Iron W

to Belmont Iron V Pa.

135 tons, boiler house, sociated Oil Co., Ba Savary & Glaeser, D

135 tons, horse barn Wisconsin, West All Bridge Co., Milwauko

130 tons, garage, Intern Co., Long Island City mont Iron Works, Ed

130 tons, state bridge Denver, Colo., to Co., Pittsburgh.

125 tons, store, W. T. C to Bethlehem Steel C

125 tons, eight bea Northern railroad, S American Bridge Co

115 tons, high school N. Y., to American burgh.

110 tons, telephone by Calif., to Judson-Pa Francisco.

110 tons, bridge 570 to Midland Structura Ill.

#### Shape Contracts

4085 tons, sheet piling canal, Boulder Canyo cation 846; bids May reclamation, Yuma

3049 tons, including 7 piling, Ballard brids Construction Co., Wes Co. and Macri & Co



Handling FERROMANGANESE from cars to stock pile this Blaw-Knox Bucket unloads an average of 7 cars per eight hour shift. The former cost of \$.65 per ton was reduced to \$.25 per ton.

This bucket handles LIMESTONE in pieces ranging from 6" to 12" from dock to 50-60 ton gondola, filling car in an average time of 20 minutes.

It unloads SPIEGEL from 50-60 ton car in 1½ hours without teeth, and handles PIG IRON from stock pile at the rate of about ¾ Cu. Yds. per grab.

Blaw-Knox Buckets are designed to meet Steel Mill requirements—put your bucket problems up to Blaw-Knox.





#### -The Market Week-

for all steel structure

on, Boston navy yard

iver bridge near Wood-Cowlitz county, Wash-

ns music hall, Buffalo; n Construction Co. Inc.,

ating plant, Holland,

ng, Cuyahoga river roject, sections 9 and Great Lakes Dredge & land, low.

Seaboard Air Line, Sa-

section 12B-13A, Bedinsylvania; bids May 19.

a tunnel, Pennsylvania ssion, Harrisburg, Pa.;

o avenue bridge, Los Annil States engineer office, ds May 16.

federal office building, Closkey & Co., Phila-

milins to process and re-

, il tunnel, Pennsylvania m ssion, Harrisburg, Pa.;

Mission street, Pitts-

Oakford, Ill.; bids to office, Chicago, June 1.

for General Foods, bids opened.

to reformatory, Elmira,

ny-Blue Mountain tununty, Pennsylvania, for urnpike commission.

eam bridges, Vermont; nd 19, H. E. Sargent, highways, Montpelier.

ent houses, Elizabeth, eth Housing authority. Center Grove, Iowa, for

Union building, Unis, Urbana; bids May 16. ry building, for Batelle ute, Columbus, O.

idges, Aurora and Par-

plant, crane runways, adelphia; Belmont Iron phia, low.

ling, United States en-proposal 267, Los An-

Philadelphia road relo-st, Md., for state.

ide separation, Stevens

aparation, Shore parkges, Arapahoe county,

ilding, Saginaw, Mich., Biscuit Co., Dayton,

supports, specification ley project, California; 215 Market street, San at \$1,223,185.

210 tons, sheet piling, Willow street sewer, Philadelphia; Ernest Ventrisen, Philadelphia, general contractor.

200 tons, highway section 3A-4C, West Moreland county, Pennsylvania; bids May 19.

200 tons, powerhouse, Hutsonville, Ill., Central Illinois Public Service Co.; bids May 17.

200 tons, municipal power plant, Corbin,

200 tons, addition to Rayen high school, Youngstown, O., for board of education.

175 tons, Allegheny mountain tunnel, Somerset, Pa., for Pennsylvania Turnpike commission.

160 tons, framing for government fish hatchery, Leavenworth, Wash.; Ameri-can Bridge Co., Pittsburgh, low.

150 tons, auditorium, Yailuku, T. H.; bids opened.

140 tons, Remsen avenue bridge, Los Angeles, for state of California; bids

140 tons, buildings, for Standard Oil Development Co., Bayonne, N. J.

120 tons, three 300-foot radio towers, Mare Island, Calif., navy yard; H. O. Bauerle, 3425 Long Beach avenue, Los Angeles; low at \$26,490.

115 tons, fruit house, St. Paul, for Chicago, Milwaukee, St. Paul & Pacific railroad.

115 tons, bridge over Ogeechee river, Ways, Ga., for Seaboard Air Line railway.

110 tons, Illinois state highway bridge, Agnew, Ill.; bids May 12.



# -- Every type of Herringbone Speed Reducer that you might need

J ONES Herringbone Gear Speed Reducers are built in a wide range of ratios and ratings to cover every requirement. Single (Type SH) reducers in standard ratios range from 1.25 to 1 up to 11 to 1 in ratings from 1.3 to 440 H.P. Double (Type DH) reducers are built in standard ratios from 10.9 to 1 up to 72 to 1 in ratings from 0.5 to 275 H.P. The triple reduction reducers (Type TH) cover a range of ratios from 86.9 to 1 up to 355.8 to 1 in ratings from 0.3 to 78 H.P.

All these reducers have heat treated gears, ground shafts and are mounted with anti-friction bearings throughout. Cast iron bases are available for all variations of motor assembly. Liberal stocks are carried to facilitate shipments.

W. A. JONES FOUNDRY & MACHINE CO. 4437 Roosevelt Rd., Chicago, Ill.



Single Reduction Type SH



#### HERE'S THE LATEST INFORMATION

#### about the application of Herringbone Reducers

This new 128 page catalog of Jones Herringbone Reducers presents a vast amount of data relating to Herringbone Reduction Units. Illustrations show a broad range of herringbone reducer applications and the technical information shows how to select reducers for all conditions of service in accordance with the A.G.M.A. recommended practice.

Double Reduction Type DH



HERRINGBONE - WORM - SPUR - GEAR SPEED REDUCERS CUT AND MOLDED TOOTH GEARS - V-BELT SHEAVES

ANTI-FRICTION PILLOW BLOCKS.

FRICTION CLUTCHES AND TRANSMISSION APPLIANCES



Triple Reduction Type TH

110 tons, store buildings, Sandusky, O. 100 tons, recreation fieldhouse for Newport, Ky.; Wolter Construction Co., Cincinnati, general contractor.

Unstated tonnage, gantry and traveling cranes for Roza and Coulee projects; bids to Denver, May 23 and 24, respectively.

Unstated tonnage, highway bridge work, in Lucas, Franklin, Summit and Richland counties, Ohio.

Fredericksen Co., Saginaw, Mich., has changed its name to Saginaw Bearing Co., more descriptive of its products.

# Reinforcing

Reinforcing Bar Prices, Page 95

Pittsburgh — Backlog of concrete bar tonnage unchanged with new projects about equaling placements, Most of the work is on public projects, although there are also a few private jobs. A colored housing project, Louisville, Ky., will require 1000 tons. The Pennsylvania turnpike is also accounting for substantial tonnage.

Cleveland-Local fabricators re-

port scarcity of ticularly from pri no immediate imi ticipated. Howeve increased demand schools, local hous work of other put some encouragem prices are weak.

Chicago—Deman even keel, with pr busy, and new inquito appear in volu office is buying nage, although in eral funds are in projects now on the

Boston -Increase quiry has failed slack in the genera projects. Vermont dred tons active for with no large indi There are few outs

New York-Led an East River di which close to 2000 closing May 19, reir chases are heavier ume of highway a coming out for Nev Jersey. Practically tonnage for the aqueduct has been contractors. Requi circumferential higi are also substantia again slumped dras

Philadelphia round tonnages r trade, near future p bright. Dullness is what by fairly large alteration jobs.

Seattle-Consider pending and sizeal be placed within 30 est is the Seattle fee 1700 tons, general c to Severin & Co., S 214,000. Washington bids May 23 for bridge calling for tons will be required plant for the Cent Mills, Spokane. San Francisco-W

## Concrete Bars C

Week ended May 1 Week ended May 6 Week ended April 25 This week, 1938 ... Weekly average, y Weekly average, Weekly average, Total to date, 1938... Total to date, 1939... Includes awards of !



HERE'S something about GOHI that immediately sets it apart as a ferrous metal of unusual quality. Judged by your own most exacting standards GOHI fully merits the high appraisal set on it by those who know metals best and who demand the utmost in performance and workability. Homogeneous, soft and ductile, easy to shape, stamp, cut, bend, seam, draw, form and weld, GOHI Pure Iron-Copper Alloy is unvarying in its physical and metallurgical characteristics, in its outstanding resistance against wear, weather and corrosion, and complete dependability wherever severe conditions are encountered.

> NEWPORT PRODUCTS: Hot Rolled Sheets, Cold Rolled Sheets... Newport Electrical Sheets... GOHI Pure Iron-Copper Alloy Sheets... Globe Brand Galvanized Steel Sheets... GOHI Enameling Iron Sheets... KCB Copper Steel Sheets... Newport Long Terne Sheets... Newport Galvannealed and DeLuxe Metal Sheets.



ANDREWS PRODUCTS in Carbon and Alloy Steel: Blooms • Forging Billets • Re-rolling Billets • Slabs • Universal Mill Plates . Sheet Bars.

#### -The Market Week-

pending business tons and considered is expected to be fires soon. Bids open work on the Coachele Boulder Canyon hia, specification 846, ons and over 4000 steel piling, to be bureau of reclamatiz. Awards totaled brought the year's 1996 tons, compared a year ago.

Numerous public let or soon to be sting the structural le largest award in \$100 tons for a hous-New Orleans. Bids dertaking at Louisee opened.

Te first section of the ent of the Bata Shoe Co., class about the largest exprospect here. The ent program offers control of the five developments reforced concrete. At the plans for three of the same in Washing-

#### ngiteel Awards

t ver drive, New York, ois Steel Corp., Pittsiteers Inc., New York,

ir project, New Orleans, Co., Birmingham, Ala. mential highway, New tem Steel Co., Bethleh M. J. Crimmins Co.,

Continental Can Co., J., to Bethlehem Steel Pa.; through Austin

inia turnpike, sections ord and Fulton couna, to Bethlehem Steel Pa.; through Empire

circumferential highto Truscon Steel Co., through Mill Basin V York.

Providence, R. I., to ., Youngstown, O.

circumferential highto Carroll McReary,

f reclamation, invita-Buena, Wash., to Beth-Seattle, Wash.

l improvements, East Patterson-Leitch Co.,

ania turnpike, section nd county, Pennsyltem Steel Co., Bethle-

noshone county Idaho, rest.

school, St. Louis, to orp., Kansas City, Mo. aboratory, Peoria, Ill., 11, Chicago.

- 180 tons, south side vocational school. Chicago, to Goss Construction Co., Chicago.
- 160 tons, bridge in Arapahoe and Douglas counties, Colorado, to unnamed interest.
- 160 tons, state highway project FA 79-D, Hardin-Meade county, district 4, Kentucky, to Laclede Steel Co., St. Louis.
- 110 tons, school, LaCrosse, Wis., to Bethlehem Steel Co., Bethlehem, Pa.
- 100 tons, highway, Fleetwood section, contract 418, Yonkers, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; through Joseph T. Ryerson & Son Inc., Chicago.
- 100 tons, school No. 5, Davenport, Iowa, to T. S. Willis, Janesville, Wis.

100 tons, uptown post office, Chicago, to Consolidated Construction Co., Chicago.

### Reinforcing Steel Pending

3000 tons, general office building, Washington; McCloskey & Co., Philadelphia, low.

1950 tons, in addition to 888 tons of sheet steel piling, Ballard bridge, Seattle; Acme Construction Co., West Coast Construction Co. and Macri & Co., Seattle, Wash., low on general contract on basis all structural bridge at \$669,998.

1700 tons, federal court house, Seattle; general contract to N. P. Severin, 222



# H. A. BRASSERT and COMPANY

310 South Michigan Avenue CHICAGO, ILLINOIS

local conditions, For particulars write to

436 Seventh Avenue PITTSBURGH, PENNA.

# Behind the Scenes with STEEL

#### Grand Larceny

■ Periodically someone just can't resist getting good and punny with us. The latest offender got the bug when he realized he was a couple of months late in sending along his \$4.00 for another 52 issues of the industry's most complete business paper. "An oversight," he blithely writes. "Didn't mean to steal it from you in spite of the fact that STEEL is a steal at four bucks!"

#### He Sings Bass

■ Ned Sparks pulled one last week on the radio which you may like better. After he finished singing (sic) that new craze, "The Three Little Fitties", he was asked why on earth he ever picked on that song. The answer: "Oh, just for the halibut!"

#### To The Point

■ But to get back to our little niche behind the scenes. Of all the ways to get across the idea of the job that STEEL is doing these days we just can't beat the simplicity and directness of reader Tom Ryan down in Tulsa, Okla. who writes: STEEL is my favorite.

#### Meet Cousin Dionne

■ Some weeks ago we made mention that we had been taken for a bit of a sleigh ride by the J. F. Bingham Mfg. Co. of Lawrence, Mass. when they reported among their ardent readers of Steel one office cat named Shrdlu. Never again will we play the role of the skeptic. They write: You seemed to be troubled by unbelief and if you attend church each Sunday you know where unbelievers goyes that's the place the steel business has gone. To relieve your doubts we enclose pictures of the office cat. First as he naturally stands and then as he looked just after we told him his name was changed to Shrdlu. Note the reaction. However, he recovered from the blow and shortly after became the happy father of the quints shown be-



low. If you are to keep up the family reputation he has given you a mark to shoot at. There seems to be little or no family resemblance between auodad Shrdlu in the Bronx Zoo and cousin Dionne Shrdlu above but to the family tree welcome be.

#### Nostalgic Note

To most of us it may seem like a backward glance over a battered no-man's land to recall the amazing facts that ten years ago this week steel production was booming along at more than 96 per cent of capacity, 633,400 automobiles had just been turned out in the month of April and U. S. Steel common was selling somewhere around 200 bucks in view of their first quarter profit of \$60,105,381—eight times the corporation's loss for all of 1938. What a nice feeling it was then to read in STEEL for May 16, 1929, "General business continues to move along at a merry clip."

SHRDLU

West Adams stree 214,000.

1650 tons, additional drive, New York;

1000 tons, housing Ky.; Stark Construclow.

800 tons, housing proj 785 tons, treasury de A-9153, list 304; San Francisco, lov

750 tons, Tuscarora tu turnpike commissio bids May 19.

700 tons, administration municipal center, W

600 tons, Pennsylvani 3B, Westmoreland nia; bids May 12. 475 tons, Ray's hill tu

475 tons, Ray's hill tu turnpike commission bids due May 19.

445 tons, Lewis river land, Clark and Cow ington; bids May 2 430 tons, 16-story h Seneca, Seattle; bid

Seneca, Seattle; bid Roosvelt Building C 400 tons, highway see moreland county, I May 19.

400 tons, plant for C Mills Co., Spokane, general contractor.

370 tons, Kings rive county, California, opened.

350 tons, Kleinhans m M. Shapiro & Son Inc., New York, low. 314 tons, highway sect

ford county, Pennsylv 300 tons, Glenwood Philadelphia; Warm

295 tons, highway sec land county, Pennsy

275 tons, high school, l 275 tons, Holly Circle San Francisco; bids o 250 tons, viaduct, Thirt ern avenues, Chicago

220 tons, Illinois Unio bana, Ill.

215 tons, housing progen, N. J.

gen, N. J.
200 tons, housing projec

200 tons, nousing project 200 tons warehouse I Washington; James L

160 tons, bridge, Mazoni 158 tons, underpass an approach to Golden ( May 24.

155 tons, highway proi New York; bids May 3 150 tons, plant for Cocs tle; bids to Graham & architects, May 16.

150 tons, Clinton-Peab Louis; Fleischer-Seeg Co., St. Louis, low.

145 tons, bars and mes bridge, route 28-24 section 2, Warren cour also 28 tons structu May 26, E. Donald Ste way commission, Trer

115 tons, freight termi Central railroad, Nev Stewart & Co., New contractor.

113 tons, bridge, Los .
California, for state: 1
101 tons, Swift & Co. pla

e low tunnel, Chanute field,

re, three state bridges in ackamas and Wheeler gon; bids at Portland,

e, mesh, Alemite Casting Co. building, Woodstock

23 paving projects,

### ron

Prices, Page 96

Pig iron shipments on have declined, partat of the coal mining p perations of merchant are unchanged. Coke min ample. Demand is ndorices have not been narially by the coal situ-

nd Deliveries to date in appearance the volume a mariations in foundry s a slight, although jobvs re unable to arrange mre than a few days many coke shipments raid this month, largely te pts to insure against strage. Producers are work coke and coal.

ipments show little precent levels, but betoal shortage, byfullry coke demand is improved, in some almost doubled. This min, as is usual, an imfoundry melt, as beitions are not bettered iculre estimated as slighteign inquiries for Chireported rather subpresent, particularly

Pig iron buying has ectly affected by the though few foundries a serious shortage. Mass., blast furnace, e in by this time, has itin settlement of the coal ports of iron include t Boston. Foundry ot improved except nces. A producer of thery in the Worcester ver, is melting iron at gh rate for equipment ill in Virginia, which a new process rayon. out -- Pig iron consumg only small lots for Some business o the \$1 advance last relains to be shipped.

eleases are heavier,

big ahead of April.

Heavier shipments are attributed principally to increased demand from heating equipment manufacturers. Melters still are ordering for only immediate needs. Six of the district's 15 blast furnaces are in operation.

Cincinnati-Shipments are lighter, and the May movement is indicated as being 10 to 15 per cent under April. New business is quiet, with some iron still to be moved against old low-price contracts. Foundry coke supplies are adequate.

St. Louis - Shipments are up slightly, the result of a moderate increase in the melt. New business, mostly for spot delivery, also is a trifle heavier. Business of jobbing foundries is spotty, with stove manufacturers receiving somewhat better orders than expected. Farm

implement builders remain on fairly high schedules.

Toronto, Ont. - Sales hold under 2000 tons for the week, with both shipments and orders in small lots for early needs. Some of the larger melters have heavy stocks on hand and are not interested in new buy-Consumption is steady at about 60 per cent of capacity.

# Scrap

Scrap Prices, Page 98

Pittsburgh—Scrap demand is dull. A few odd cars of No. 1 heavy melting steel are moving into consumption, generally at \$15. Brokers' buying prices vary from \$14 to

PAGE Hi-Tensile ( for welds that must stand heavy strain • Jobslike welding the circle frame of a road

grader, as shown above, are "duck soup" for Page Hi-Tensile "G." For Hi-Tensile "G" produces joints that withstand shock and strain. Produces them at a profit, too.

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smooth bead and is good for production, maintenance and construction work. . . . Your local Page distributor will give you full information.

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\$14.75. Recent railroad lists brought bids of around \$16, but the material apparently went for export at better prices.

Chicago — Scrap is quiet, with prices unchanged. The market has a steady undertone, and No. 1 steel is firm at \$12.50 to \$13. Dealers are receiving \$12.75 for tonnages, but this price is not bringing out large lots. Other prices are rather nominal.

melting steel for export are relatively active, approximately 10,000 tons having been loaded or shipped during the last 10 days. Brokers are paying \$14 and \$13 respectively for the two grades with small lots sometimes secured 25 cents a ton lower. Prices for several grades for Pennsylvania shipment are 25 to 50 cents a ton lower but little is being shipped to that district.

New York—Domestic scrap buying has slumped further, with prices generally unchanged but untested. Practically all buying is for export at unchanged prices. While not all the tonnage has been bought, the recent purchase by the European cartel is likely to reach 400,000 tons. At least six grades are included at prices unchanged from the last transaction in March.

Philadelphia—The European cartel is reported to have placed 400,000 tons of scrap on the basis of \$13 for mixed cast, \$12.50 for old bundles, \$11 for stove plate, \$13.50 for No. 2 steel and \$15 for No. 1. This tonnage, plus Japanese purchases, have prevented further weakness in the local market. The trade is paying \$13.50 for No. 2 and No. 1, Port Richmond, against export orders but hopes to make up part of the loss on other grades. The domestic market is quiet.

Buffalo—Several grades of scrap are lower on recent sales. Some confusion exists as to prices, partly because of different specifications established by consumers. A small tonnage of old bundles has been sold at \$10, off 50 cents from the previous sale, while another user has paid \$12 for No. 2 steel. Cupola and machinery cast are easier.

**Detroit**—Quotations continue to slip, with numerous grades down 25 to 50 cents. Buying is notably absent, although bids on the Fisher list of bundles May 15 may mark a turning point in the downward drift of prices.

Cincinnati—Prices of some grades have yielded further to poor demand. Heavy melting steel is off 25 cents at \$10.50 to \$11. Heavier grades are being taken readily, but low-price items are difficult to move.

St. Louis-Mill buying of heavy

melting steel ag ferred. No. 1 ma 50 cents, but pri nominally unchan is coming into the road lists are rela

Seattle — Expoing present prices orders from the buyers claim the markets are moreing is small. Loc requirements at a for No. 1 and N

Toronto, Ont.—(
is light. Hamiltor
ing only for a r
contracts just clo
prevailing the past
a softening tender
in Canadian man
ers are adhering

# Warehou

Warehouse Pri.

Cleveland—Demovorably with the though what occurrent is noted is it than size of orders

Chicago—Busines is on a par with A indicated for the Heavier demand from anticipated.

Boston — Volume slightly over April appointing to most ties have contribute shown by a few of far this month. To of standard items concessions in num

Philadelphia + Q 25 per cent more in May compared wi with dollar volume cent. Buying is Some price shading

Buffalo—Sales are than a month or tw ties are in best der vanized sheets, ba slightly more active

Cincinnati—Sales warehouses are hold levels, some gain in nage being reporte the disappearance coal mines, because which normally acc 15 per cent of total of

St. Louis—Sales at ly so far this month slow. Building work some betterment, but facturing needs have seasonal improvement

Baltimore—Jobbing far this month has ahead of the corres rive residential conresulting in a fairly t of roofing and other tucts. Prices in genly, the break in mill to not as yet having

# 1 Europe

eel Prices, Page 97

y Radio)—Production on continues at a rate est records of the past, and commercial conheavy tonnages and subsidy resulting in cifications. April outigots totaled 1,058,200 onpared with 1,170,900

April pig iron pro-18,900 tons, compared pos in March.

d producers of conel are well occupied. e een placed with Consels for 100,000 tons of del. Scrap supplies are ty is developing. Makare heavily engaged. the reports export trade to ce concessions disaptunderstood that the understood that the burg, has decided to the prevailing level.

### re

Prices, Page 98

delayed by the slowdelayed by the slowdich the passage to
was cleared of ice,
ded lately by the small
al available at Lake
shipment to the head
Rather than make
trip without cargo
ave been held back
the resumption of coal

teamship Co., ore and beet of United States egan its season last 4 vessels, represent to f available single in operation. Last any started the seavy 16 with 40 vessels 1, or 60 per cent of ge. The entire fleet steamers and six the largest on the

r at of iron ore in over seected to go out about or the Mary Charlotte aunee, Mich., on the ge. Between 1903 and 1928 the mine shipped 4,789,000 tons of ore, but movement has been suspended since the latter date.

### Import Indian Iron

Philadelphia—Featuring iron and steel arrivals here in the week ended May 6 was 998 tons of pig iron from India. Other arrivals were 48 tons structural shapes, 29 tons steel bars, and two tons steel bands all from Belgium; and 41 tons steel tube, 33 tons wire rods and nine tons of steel bars, all from Sweden.

One hundred fifty tons of ferromanganese came in from Poland, the second such arrival from that country here recently.

### Coke Oven By-Products

Coke By-Product Prices, Page 95

New York - Demand for coke oven by-products is active. Distillate consumption traceable to the automobile industry is slower, but miscellaneous buying and releases against old contracts are steady; also a substantial export business is being done. Lower production has had a firming influence on prices which are unchanged. Naphthalene is active, demand being at a midseason peak for household use through jobbers and retailers. Phenol is also moving well, notably to the plastic and resin trade. Shipments of sulphate of ammonia against contracts have been normal. For some days spot buying has also been on the up-trend.

#### **Nonferrous Metals**

New York—Establishment of electrolytic copper on a flat 10-cent basis was the most important development in nonferrous metals this week. Sales have been heavier since early in April when the market finally broke from the 11.25-cent level but any sustained buying movement likely will be delayed until actual consumption tends definitely upward.

Copper—All mine producers lowered prices ¼-cent on Monday to 10.00c, Connecticut, with the exception of Phelps Dodge who remained out of the market at 10.50c. Sales jumped on Wednesday to over 16,000 tons, reflecting the favorable price level here and display of strength abroad. Copper and brass rolled and drawn product, scrap and brass ingot prices were revised downward in line with the primary copper market. Export copper held at around 10.12½c while resale electrolytic copper was quoted at 10.00c.

Tin - Straits spot fluctuated be-



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- Eureka No. 332 heat resisting electrode is a non-magnetic type of heat resisting steel, possesses a high nickel content, and the deposit is tough and ductile as in the welded state.
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tween 49.00c and 49.30c, closing at the lower level. Consumers bought moderate tonnages in view of the firm price situation.

Lead — All sellers continued to quote on the basis of 4.60c, East St. Louis. Producers balanced and on some days exceeded their intakes but low levels in London again delayed an upward revision in the market here.

Zinc — Sales were considerably lighter than during the previous week but shipments are holding up well. Closing of a plant due to the uplant due to the uplant the statistical positive. Prime wester East St. Louis.

Antimony — An prices advance <sup>14</sup>-e to the basis of 11.75 spot in cases despit sales.

Name Brass I

# Nonferrous Metal Prices Spot unless otherwise specified. Cents per pound.

	Electro, del.	del.	Casting,	Stra	its Tin, v York	Lead	Lead East	Zine	Alumi- num	Amer.	Nickel Cath-
April	Conn.	Midwest	refinery	Spot	Futures	N. Y.	St. L.	Şt. L.	99%	Spot, N.Y.	odes
May 6	10.25	10.25	9.75	49.25	48,50	4.75	4.60	4.50	20.00	11.50	35.00
š	10.00	10.00	9.62 1/2		48.50	4.75	4.60	4.50	20.00	11.50	35.00
9	10.00	10.00	9.62 1/2		48.45	4.75	4.60	4.50	20.00	11.50	35.00
10	10,00	10.00	$9.62 \frac{1}{2}$		48.55	4.75	4.60	4.50	20.00	11.50	35.00
	10.00	10.00	9.62 1/2		48.55	4.75	4.60~		20.00	11.75	35.00
12	10.00	10.00	$9.62 \frac{1}{2}$	49.00	48.35	4.75	4.60	4.50	20.00	11.75	35.00
MILI	PROD	UCTS				Chica	go. No	. 1		7.37 ½	-7.62½
		ase, cent				St. L	ouis			7.	50-7.75
speci		opper br			based					Borings	
	on.	10.00c Co	onn. copp	oer		New				5.	00-5.25
		Shee							t Coppe		
		(high) .				New	York .			6.	25-6.50
		rolled				Cleve	land .			5.87 1/2	-6.12 1/2
		jobbers								6.	
Zinc,	100 10.	base			.9.75	St. L	ouis			6.	00-6.25
TT23-	17	Tube			10.00			Ligh	it Bras	S	
		brass								3.121/2	
Seam	iess cor	pper			10.02					3.	
Y 72 3-	17	Rod			11.05	St. L	ouis			3.	50-3.75
Copp	yellow	brass			11.85			1	Lead		
Coppe	er, not i	rolled			14.62					4.	
Conn	ar untr	immed .			15 97					3.	
Copp	ci, wiiti				10.01					3.	
		Wir				St. L	ouis			3.	50-3,75
Yello	w brass	(high) .			16.73				Zinc		
OLD	METAL	.s								2.50	
ONL			andan or Davi							2.	
		. <i>Del. Bu</i> C <b>ompositi</b>				St. L	ouis			2,0	00-2.25
Morre						***			minum		
										5.	
										7,	
										15.2	
		vy Coppe			0.40		NDAR				JU" (,ZD
New		Vo. 1			8716					carloads.	10.95
Cleve	land, N	0. 1	7	.62 1/2 -7	.871/2					carioaus.	

■ Bristol Brass Corhas appointed Steel cago, as its midwestive. Steel Sales alternational Nickel the Copperweld Steel Pa.; Aluminum C Pittsburgh; Superi Pittsburgh, and sevanies. It has largleading midwesternters.

# Equipmen

New York ment in domestic n ders is encouraging large lists are being orders are for one a time. A steady ment shop orders are although in many contracts do not al weeks to two month. bids are taken. machinery interests a steady rate; also a moderate improv mand for single too and metal-working merous builders of in the East still ha backlogs and in some extending deliveries o of special equipm Worcester, Mass., are textile mill equipme active on a large or machines.

Chicago — Market tools and heavy mach improved. Bookings s slow, but ahead of tof April. Inquiries hin volume recently, a cates a more active hip part of buyers. At show sponsored by Ni & Bisell, dealers, last sentiment was shown and sellers are confide is due for improvement future.

Seattle — Items rec salmon canning industi seasonal demand, with operations after settler



rical equipment and are moving freely, ig orders have been ille Authority has ing units and deal and for conductor ir will receive offers

May 17 for furnishing a 28¼-inch tube valve for Columbia Basin project, Spec. 1226-D. Farm Security Administration, Portland, on May 18 will open bids for pumphouses and four pump units, for Bonners Ferry, Idaho.

soon let contracts for constructing a one-story,  $180 \times 180$ -foot brick, concrete and steel factory costing over \$40,000. M. E. Granger, Syracuse, engineer.

# ruction

# and Enterprise

& Construction Co., Minneapolis, consulting engineer. (Noted May 1.)

SYRACUSE, N. Y .-- Kilian Mfg. Co. will

#### Pennsylvania

EMPORIUM, PA.—Hygrade Sylvania Corp., Salem, Mass., has awarded contract to Leslie R. Porter Co., Boston, for constructing a three-story faetory and office building costing \$200,000. S. M. Brown, Salem, engineer.

#### Michigan

ECORSE, MICH.—Voisine Steel Co. has been incorporated with capital of \$10,000 to deal in metal products. William Vois-

Village, Charles Miller, ing plans and will be bids this summer on ight and power plant Involves two 300s, two 400-kilowatt enord and auxiliary equiping engineer, Floyd G.

O.—Village, Herman considering construcge system and sewage

Hankins Container Co., esident, has placed conlmore-Carmichael-Olson or constructing a twoated to cost \$65,000.

illage, Ralph Goodale, n an engineer to make ruction of a proposed and sewage disposal

-City, R. L. J. Wagar, dering results of survey enstruct a diesel power that of \$266,900. Inl-horsepower high-speed ree 650-kilowatt engines, te. E. Hartung, city

ity, D. B. Young, mayor, s and will be ready for 3 on improvements in Consulting engineers, y, Toledo, O.

Village, C. P. Gables tentative plans for age system and sewage osting \$65,800. Consult-Henry Martin, Ports-

IELD, O.—Village, H. B. yor, is completing its e ready for bids about ruction of a projected

—Village, E. L. Wolff, ing proposal to install vatt steam turbine genmunicipal power plant \$100,000.

JNN.—International Silarded general contract a 50 x 60-foot power Wales Lines Co., Mericost is \$40,000. (Noted

n Mfg. Co. is making and improve its factory timated total cost of 840,000.

Pheral Mills Inc., Min-Davis, president, will rein three weeks on constory, 77 x 315-foot food house costing approxi-10. Cereal Engineering





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ine, 4000 High street, representative.

HOLLAND, MICH.—City, H. Geerlings, mayor, takes bids to May 24 for constructing a power plant, water tunnels outfall sewers, etc. PWA project. Hamilton & Weeber, Grand Rapids, Mich., consulting engineers.

MUSKEGON. MICH.—Universal Atlas Cement Co., Muskegon Lake, Mich., has awarded general contract for constructing a storage and distributing plant costing \$100,000 to Muskegon Construction Co. and Lake States Engineering Co., 111 West Jackson street, Chicago.

#### Illinois

FULTON, ILL.—City takes bids soon on construction of a projected water-

works costing about \$50,000. pumping equipment and distributing system. Caldwell Engineering Co., Jack-Jacksonville, Ill., consulting engineer.

RUSHVILLE, ILL. - City, I. Payton, clerk, has approved bond issue to finance proposed water system improvements, involving new storage facilities, tank and tower, filter plant, etc., costing \$75,-000. Wood, Walraven & Tilly, Springfield, Ill., consultants.

#### Alahama

OPELIKA. ALA. -Tallapoosa River Electric Membership Corp. has received a \$325,000 REA allotment to finance construction of 362 miles of rural electric power lines in six counties.

#### Maryland

BELCAMP, MD.cago, has let genera Bros., 19 West Frank for constructing a st to cost \$1,000,000.

#### Kentucky

CYNTHIANA, KY \$183,000 to Harrison tric Co-operative Co 232 miles of rural counties.

MIDDLESBORO. receive bids on con-and a sewage trea! \$400,000 in all. P Watkins, Lexington,

#### **Mississippi**

CHARLESTON, M approved city's propo-bonds to finance of electric distribution

#### North Carolina

ASHEBORO, N. C. PWA allotment and May 16 for construbasin, distribution plant with daily comillion gallons.

GREENVILLE, N. ceived \$88,000 allotm constructing 110 millines to serve 396 con

#### Tennessee

CLARKSVILLE, TE rich Co., Akron, O., tracts and begin c 200,000-square foot pla mated \$1,500,000 for chanical rubber goods air conditioned, will power plant.

#### Missouri

CHILLICOTHE, MO tric co-operative, F. will soon receive bide in four counties some power lines costing a

COLUMBIA, MO.—(
mayor, takes bids soo
of a complete sewaz
costing about \$135,001
W. M. Spann, Kansas
sulting engineer.

KANSAS CITY, MOgineer, Postal Telegra soon receive bids on 16,000 and 40,000 kilov two turbines, 20,000 a power. Total cost. \$1 power. Total cost, \$1 installed at Ft; Peck project.

#### Arkansas

MT. HOME, ARK.-Electric Co-operative accepts bids on consimiles of rural power transcription four counties at

#### Wisconsin

LA CROSSE, WIS.-T of heating equipment, ha tract to Austin Co., Cl structing a one-story, 12 dition to its factory. Par endorff, La Crosse, arch

LA CROSSE, WIS .-



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5634 Fillmore St., Chicago, Ill. New York Office—114 Liberty St. Co-operative, E. J. Stoneham, Platteville, Wis., president, has been allotted additional REA funds and proposes to build a \$1,500,000 generating plant. Bids will soon be received for equipment including two high-pressure turbines. A. Y. Taylor, St. Louis, consulting engineer.

#### Minnesota

HIBBING, MINN.—Water, light, power and building commission is taking bids until 9 a. m., May 25, for new turbine generating unit, surface condenser and auxiliaries. Certified check 10 per cent to accompany bid. Burlingame, Hitchcock & Estabrook, Minneapolis, consulting engineers. (Noted March 27.)

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has acquired a 14-acre site and is beginning construction of an oil refining plant to cost \$250,000. Will have 1500-barrel daily capacity. J. C. Niemeyer, St. Paul, architect.

#### Texas

AUSTIN, TEX.—Lower Colorado authority, Fritz Englehard, chairman of directors' board, receives bids May 17 for furnishing switchboard addition, control equipment and appurtenances to be installed at Buchanan dam.

#### North Dakota

MINOT, N. DAK.—State highway department, Z. E. Sevison, highway engineer, has awarded contract to J. H. Mackley for constructing a 60 x 70-foot maintenance shop costing about \$100,000. Will install equipment, including a traveling crane. Ritterbush Bros., Bismarck, N. Dak., architects.

#### Nebraska

BEATRICE, NEBR.—Gage County Electric Co. proposes to build a flour mill with a complete hydroelectric plant at estimated total cost of approximately \$1,000,000.

GERING, NEBR.—Bureau of reclamation, Denver, takes bids to 2 p. m., May 26, on control switchboard, three 15-kilovolt amperes distribution transformers seven oil-immersed potential transformers, three outdoor current transformers, three dry-type current transformers, disconnecting switches, oil circuit breakers and lightning arresters for Gering substation.

MADISON, NEBR.—Madison County Rural Public Power district receives bids to May 25 on the construction of some 275 miles of rural power lines costing \$200,000. H. S. Nixon, Omaha, Nebr., consulting engineer. (Noted Feb. 13.)

SEWARD, NEBR.—Seward County Rural Public Power district, L. C. Geis, president, has awarded contract to Inland Construction Co., 3867 Leavenworth street, Omaha, Nebr., at \$153,652 for constructing 228 miles of rural electric lines and one power substation.

#### Iowa

CEDAR FALLS, IOWA—State board of education, M. R. Pierson, secretary, Des Moines, Iowa, takes bids to 2:30 p. m., May 22, for a new steam turbogenerating unit in the heating and power plant at State Teachers college. Certified check \$1500 to accompany bid.

COLLINS, IOWA—City, O. N. Serbein, clerk, is considering installation of a water purifier and incidental equipment in its waterworks plant.

CORNING, IOWA—REA has allotted \$94,500 to the Adams County Co-operative Electric Co. for constructing 78 miles of rural electric power transmitting lines serving consumers in five counties.

MENLO, IOWA—Village, J. H. Wilson, clerk, takes individual bids until 2 p. m., May 17, on constructing pump house, and installing pump with motor valves, meter, electric accessories. Certified check 5 per cent to accompany bid. T. S. DeLay, Creston, Iowa, consulting engineer.

MT. PLEASANT, IOWA—Southeastern Iowa Co-operative Electric association, P. F. Cornick, president, has been allotted \$174,000 by REA to finance construction of 175 miles of rural electric power transmitting lines in two counties.

PRESTON, IOWA—City votes May 24 in special election on proposal to con-

struct a municipal light whose cost will not e

WOODBINE, IOWAproved city's proposa municipal light plant mately \$115,000. C. S has charge.

#### Colorado

BRIGHTON, COLO. tric Association Inc., 3 dent, has \$320,000 Ri proposes to erect 34 electric distributing lir

#### Wyoming

CASPER, WYO.—Corbegun construction of rication plant. Paul G tion superintendent.

#### Idaho

BONNERS FERRY, I curity administration, is taking bids until Mathree pumphouses an pumps with diesel eng

MOSCOW, IDAHO—construction of water ments, including a 500.0 storage tank, and city bonds to finance project 13.)

#### Utah

HATCH, UTAH—Gai Panguitch, Utah, will s for constructing a 3c electric power plant, ir able generating and off ment. W. T. Eardley engineer.

#### Pacific Coast

ALHAMBRA, CALIF & Steel Co. this summaddition to its factory.

LOS ANGELES — (Grinding Co. will begin mediately of a new war feet.

LOS ANGELES—Certi business under the firm Machine Co., 912 East F has been issued to 19 Pierson.

LOS ANGELES—City, and light, has complete will soon call for bids of a warehouse, office I and shop, and storage shof \$500,000. Structures and steel.

CAMAS, WASH.—Cr Paper Co., J. E. Hanny poses to build a four-stroll storage building, w dling and other equipm

SEATTLE—West Coast Colman building, has be with capital of \$10.000 and associates to engage

#### Canada

CALGARY, ALTA.—It Ltd., Toronto, has awai M. W. Kellogg Canadiantreal, for constructing a refining and cracking pic cost of \$1,700,000. (Note

SIMCOE, ONT.—City usion, W. D. Stalker, mailbids on installing a new unit costing about \$30.00 street station.

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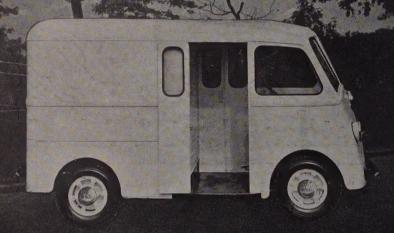
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